

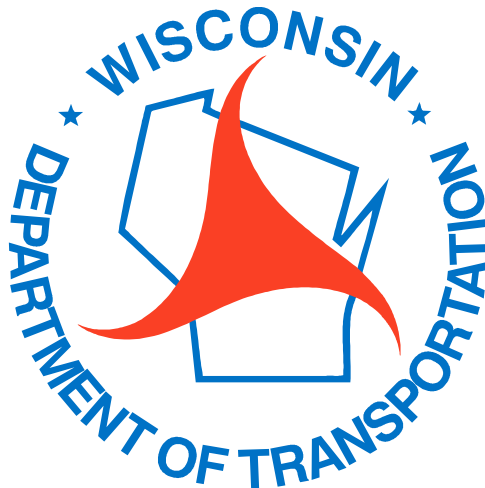
STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

Supplemental Specifications

amending the 1996 Edition of the
STANDARD SPECIFICATIONS
FOR
HIGHWAY AND STRUCTURE
CONSTRUCTION

2000 Edition



INTRODUCTION

Supplemental specifications are issued annually. The supplement that applies to a proposal will be referenced in the "general" special provision of that proposal, but will not be bound into the proposal. Specification revisions made between the annual supplements will be issued as needed in interim supplemental specifications. The interim that applies to a proposal will be referenced in the "general" special provision of the proposal, but will not be bound into the proposal.

One copy of the annual supplement and each interim will be distributed at no charge, by a continuing update service, to prequalified contractors, eligible engineering consulting firms, and selected WisDOT employees. There is no updating service for other users.

Prequalified contractors are responsible for obtaining sufficient copies of this document for bidding and contract management. They also are responsible for notifying their subcontractors and suppliers about the supplement and interim that apply to a proposal.

Eligible engineering consulting firms are responsible for obtaining sufficient copies of this document for their personnel to fulfill their responsibilities under an engineering services contract with the department.

The following specifications have been issued:

	Effective From	
	Letting	to Letting
1996 Standard Specifications	Oct. 1996	Until Superseded
1996 Supplemental Specifications	Oct. 1996	Oct. 1997
Interim Supplemental Specifications No. 1	Jan. 1997	Oct. 1997
1997 Supplemental Specifications	Oct. 1997	Oct. 1998
Interim Supplemental Specifications No. 1	June 1998	Oct. 1998
1998 Supplemental Specifications	Oct. 1998	Oct. 1999
Interim Supplemental Specifications No. 1	Feb. 1999	Oct. 1999
1999 Supplemental Specifications	Oct. 1999	Oct 2000
2000 Supplemental Specifications	Oct. 2000	Until Superseded

In this supplement we continue to use dual dimensioning for all new revisions while those changes published before the 1998 interim number. one still have the metric units only. For dual dimensioned provisions, primary values are given in the U.S. standard measure system while the SI metric system equivalents are shown in parentheses. Contracts with the plans and schedule of items developed under the U.S. standard measure system, will be administered using the U.S. standard measure system values. Contracts with the plans and schedule of items developed under the SI metric system, will be administered using the SI metric system values.

This supplement contains the following specification components identified by number and organized in a hierarchy as follows:

1. Parts, for example "Earthwork" referred to as: part 2.
2. Sections, for example "Bidding Requirements and Conditions" referred to as: section 102.
3. Subsections, potentially containing subordinate subsections, for example "Issuing Bidding Proposals" referred to as: 102.3 or "General" referred to as: 102.3.1.
4. Paragraphs, for example paragraph one of 102.3.2 referred to as: 102.3.2(1).
5. Numbered items, for example item one of 102.3.2(1) referred to as: item one of 102.3.2(1).

The current supplement and interim are included with each new standard specifications book issued or purchased. Address written requests for additional complimentary copies of supplements or interims to:

Wisconsin Department of Transportation
Bureau of Highway Construction, Room 601
P.O. Box 7916
Madison, WI 53707-7916

Obtain free copies of the supplements and interims in person, at:
Room 601, Hill Farms Transportation Building, 4802 Sheboygan Avenue, Madison, Wisconsin.

PREFACE

Wisconsin Department Of Transportation
Division Of Transportation Infrastructure Development
Bureau Of Highway Construction
Standards Development Section

July, 2000

To: Specification Users

Subject: 2000 Supplemental Specifications amending the 1996 Standard
Specifications for Highway and Structure Construction

Issued By: Jerry H. Zogg, P.E.
Chief Standards Development Engineer
Bureau of Highway Construction

These 2000 supplemental specifications amend the Standard Specifications for Highway and Structure Construction, 1996 Edition, and are considered part of those standard specifications, superseding conflicting provisions applicable under the contract. Previously issued supplements and interims have been incorporated in this document. The 2000 supplement has been approved by the Federal Highway Administration and becomes effective with the October 10, 2000 letting, remaining in effect until superseded. Previously issued supplements and interims will no longer be in effect after October 10, 2000 unless referenced in previously let contracts.

This document was prepared by: Michael Hall
Standards Specification Engineer
Bureau of Highway Construction

The following preface section is provided to briefly describe specification revisions made since the 1999 supplement. These descriptions are provided for the convenience of the user only, and are not contractually binding. Each new revision is listed by it's subsection number and title. Where a title has been revised, the listing gives the new title.

PREFACE

107.17.1 General

Revise paragraph four to require a minimum horizontal clearance of ten feet (3 meters) for temporary construction near railroad tracks. Minimum clearance requirements for permanent construction are a design matter and are specified in Wisconsin Administrative Code RR 2.15.

107.17.3 Railroad Insurance Requirements

Revise this subsection to clarify what proof of insurance submittals the contractor must make to both the railroad company and the department, and when the contractor can begin work.

107.27 Third Party Beneficiary

Add this new subsection to clarify that a non-party to the department's contract can not maintain an action for damages under the contract.

108.8 Liquidated Damages

Revise this subsection to better describe liquidated damages and reflect the results of the 1999 survey of the actual daily costs incurred by WisDOT for administrative and engineering personnel on construction projects.

204.1 Description

Revise this subsection to incorporate STSP 204-015 into the standard specifications and describe Removing Marker Posts.

See also Bid Items Added.

204.2.1 Breaking Down and Removing

Revise this subsection to incorporate STSP 204-015 into the standard specifications and specify methods for Removing Marker Posts.

See also Bid Items Added.

204.3 Method of Measurement

Revise this subsection to incorporate STSP 204-015 into the standard specifications and specify measurement of Removing Marker Posts.

See also Bid Items Added.

204.4 Basis of Payment

Revise paragraph one to incorporate STSP 204-015 into the standard specifications and specify payment for Removing Marker Posts.

Revise paragraph four to remove reference to unclassified excavation.

See also Bid Items Added and Bid Items Retired.

205.2.1 General

Revise this subsection to eliminate the unclassified excavation bid item.

See also Bid Items Retired.

PREFACE

205.2.2 Common Excavation

Revise this subsection to include a five-times multiplier for removing boulders. All work previously bid under the retired Unclassified Excavation item is now included in Common Excavation.

205.2.6 (Vacant)

Delete this subsection to eliminate the unclassified excavation bid item. The Common Excavation item is also modified to include a five-times multiplier for removing boulders.

See also Bid Items Retired.

205.3.3 Excavation Below Subgrade

Revise paragraph one to add rock removal and material salvaged from old road cores in marshes to the items defined as EBS. These items were previously identified as EBS in subsection 205.2.1.

205.5.1 Excavation

Revise paragraph two to eliminate the unclassified excavation bid item.

See also Bid Items Retired.

205.6.1 Excavation

Revise paragraphs one and two to eliminate the unclassified excavation bid item.

See also Bid Items Retired.

206.3.13 Disposal of Excavated Material

Revise paragraph one previously published in the 1996 supplement to eliminate the unclassified excavation bid item.

See also Bid Items Retired

403.3.2 Laboratory Requirements

Revise paragraph three to refer to the new superpave mixture design procedures.

403.3.3.1 Required Tests for a Contract of 4600 Megagrams of Mixture or Greater

Revise paragraph one to refer to the new the specific gravity requirements of the superpave mixture design procedures. Also eliminate the optional dry batch sampling from batch plant hot bins.

403.3.4.2 Control Charts

Revise paragraph three to refer to the specific gravity and sieve size requirements used in the new superpave mixture design procedures. Add 37.5 mm, 25.0 mm, 19.0 mm, and 12.5 mm sieves and delete the 600 μ m sieve.

403.3.5 Control Limits

Revise this subsection to refer to the sieve size requirements used in the new superpave mixture design procedures. Add 37.5 mm, 25.0 mm, 19.0 mm, and 12.5 mm sieves and delete the 600 μ m sieve.

403.4 Quality Assurance

PREFACE

Revise paragraph one to decrease the engineer's assurance testing frequency to 1 in 15 or more frequent.

Revise paragraph four to refer to the specific gravity and sieve size requirements used in the new superpave mixture design procedures. Add 37.5 mm, 25.0 mm, 19.0 mm, and 12.5 mm sieves and delete the 600 μ m sieve.

405.3.9.2 Thickness

Revise this subsection to implement new layer thickness limits consistent with superpave mixture design.

407 ASPHALTIC CONCRETE PAVEMENT

Replace this entire section and all previously published supplementals to implement new superpave mixture design procedures and new incentive pay for density. Also revise the soundness provision to require freeze-thaw testing for limestone/dolomite aggregates produced from sources in Green Lake County.

See also Bid Items Added and Bid Items Retired.

411.2 Materials

Revise this subsection, published first in the 96 interim supplement, to eliminate references to the LV, MV, and HV mixes and be consistent with the new superpave mixture designations.

411.3 Composition of Mixture

Revise paragraph one, published first in the 96 interim supplement, to eliminate references to the LV, MV, and HV mixes and be consistent with the new superpave mixture designations.

415.5.8 Transverse Joints

Revise paragraph three to implement 1999 Construction Note number 13 that eliminates cutting of the tie wires on dowel bar baskets.

501.3.6.4.4 Physical Properties

Revise paragraph four of the previously issued supplemental specification to add Green Lake County to the list of counties the department tests for freeze-thaw soundness.

501.5.2 Proportions for Concrete

Revise the "Proposed Master Limits of Job Mix" table in this subsection to define new maximum limits for fly ash and slag in concrete mixes. Also add footnote (10) to describe the procedure for modifying the standard A or B mixes by replacing cement with fly ash or slag on a one-to-one by weight basis.

501.10.1 Slump

Revise the upper slump limit for concrete placed with internal vibration to be consistent with the slump required under the Bridge QMP.

PREFACE

502.3.9 Curing

Delete paragraph 14 that prohibits construction vehicles and placement of barrier concrete before 7 days after casting the deck. This provision is in conflict with 502.3.6.4 that allows placement after 48 hours if heavy equipment is not used on the deck and the deck is properly cured.

502.5.1 Description

Revise paragraph three to eliminate redundancy with the Basis of Payment subsection.

502.5.2.2 Anchors, Type S

Revise this subsection to eliminate the enclosed subsections and add specification requirements for reinforcing bars used for type S anchors.

502.8.7.2 Anchors, Type S

Revise this subsection to clarify that rebar used for Type S anchors is paid for under either the appropriate High Strength Bar Steel Reinforcement or Coated High Strength Bar Steel Reinforcement item.

503.3.2.4 Surface Finish

Revise paragraph one to require a sack rubbed surface finish and concrete sealer on exposed surfaces of all prestressed girders.

506.2.4.3 Casting

Revise paragraph one to eliminate the redundancy between the specifications and the standard detail drawings. All the required information on name plates is described in SDD 12 A 3-6, "Name Plate (Structures)".

512.4.2 Permanent Steel Sheet Piling, Driven

Revise this subsection to clarify that the department measures the area of permanent sheet piling from the sheet pile tip elevation to the top cutoff.

512.4.3 Temporary Steel Sheet Piling

Revise this subsection to clarify that the department measures the area of temporary sheet piling from the sheet pile tip elevation to the retained grade elevation plus an additional one foot height of wall above the retained grade. The retained grade is the maximum elevation of the material on the high side of the temporary sheet piling required at any point during construction. The intent is to pay for whatever area is needed to perform the work, plus an additional foot of height.

628.1 Description

Revise paragraph three to exclude ditch checks from the Erosion Bale item and require maintenance of erosion bales. Add paragraphs nine through fourteen to describe polyethylene sheeting, turbidity barriers, soil stabilizer, and inlet protection, temporary ditch checks, and culvert pipe ditch check items. Standardized Special Provisions (STSP's) 628-014, 268-015, 628-020, 628-030, 628-035, 645-040, 628-040, 628-045, and 628-055 previously included these provisions.

See also Bid Items Added.

PREFACE

628.2.7 Sand Bags

Add this new subsection to specify the material requirements for sand bags. Standardized Special Provision (STSP) 628-001 previously included these provisions.

See also Bid Items Added.

628.2.8 Polyethylene Sheeting

Add this new subsection to specify the material requirements for polyethylene sheeting. Standardized Special Provision (STSP) 628-014 previously included these provisions.

See also Bid Items Added.

628.2.9 Turbidity Barriers

Add this new subsection to specify the material requirements for turbidity barriers. Standardized Special Provision (STSP) 628-020 previously included these provisions.

See also Bid Items Added.

628.2.10 Soil Stabilizer

Add this new subsection to specify the material requirements for soil stabilizers. Standardized Special Provisions (STSP's) 628-030 and 628-035 previously included these provisions.

See also Bid Items Added.

628.2.11 Inlet Protection

Add this new subsection to specify the material requirements for inlet protection. Standardized Special Provision (STSP) 645-040 previously included these provisions.

See also Bid Items Added.

628.3.1 General

Revise this subsection to include delivery of 25 percent of manufactured temporary ditch check materials if the contractor uses a manufactured alternative selected from the department's erosion control product acceptability list (PAL).

628.3.3 Erosion Bales

Revise this subsection to require the contractor to clean excess sediment and maintain erosion bales during the project.

628.3.4.2 Inspection and Maintenance

Revise paragraph two to clarify that it is primarily the contractor's responsibility to maintain erosion control devices to keep them functioning as designed.

628.3.9 Polyethylene Sheeting

Add this new subsection to specify the construction and removal requirements for polyethylene sheeting. Standardized Special Provision (STSP) 628-015 previously included these provisions.

See also Bid Items Added.

PREFACE

628.3.10 Turbidity Barriers

Add this new subsection to specify the construction and removal requirements for turbidity barrier. Standardized Special Provision (STSP) 628-020 previously included these provisions.

See also Bid Items Added.

628.3.11 (Vacant)

Add this new subsection as a place holder for future implementation of Standardized Special Provision (STSP) 107-070.

628.3.12 Soil Stabilizer

Add this new subsection to specify construction requirements for soil stabilizers. Standardized Special Provisions (STSP's) 628-030 and 628-035 previously included these provisions.

See also Bid Items Added.

628.3.13 Inlet Protection

Add this new subsection to specify construction requirements for inlet protection devices. Standardized Special Provision (STSP) 645-040 previously included these provisions.

See also Bid Items Added.

628.3.14 Temporary Ditch Checks

Add this new subsection to specify construction requirements for temporary ditch checks constructed either of erosion bales or using manufactured alternatives. Standardized Special Provision (STSP) 628-045 previously included these provisions. Stone or Rock Ditch Checks are covered under STSP 628-050.

See also Bid Items Added.

628.3.15 Culvert Pipe Ditch Checks

Add this new subsection to specify construction requirements for culvert pipe ditch checks constructed of sand bags.

See also Bid Items Added.

628.4.13 Sand Bags

Add this new subsection to specify that the department will no longer measure sand bags for payment as Standardized Special Provision (STSP) 628-001 prescribed. Sand bags are now incidental to the other erosion control item that use them.

628.4.14 Polyethylene Sheeting

Add this new subsection to specify the method of measurement for Polyethylene Sheeting. The department will no longer measure delivery and installation separately as Standardized Special Provisions (STSP's) 628-014 and 628-015 prescribed. Polyethylene Sheeting is now a single item that includes delivery and installation.

See also Bid Items Added.

PREFACE

628.4.15 Turbidity Barriers

Add this new subsection to specify the method of measurement for Turbidity Barriers. Standardized Special Provision (STSP) 628-020 previously included these provisions.

See also Bid Items Added.

628.4.16 Soil Stabilizer

Add this new subsection to specify the method of measurement for Soil Stabilizer. Standardized Special Provisions (STSP's) 628-030 and 628-035 previously included these provisions.

See also Bid Items Added.

628.4.17 Inlet Protection

Add this new subsection to specify the method of measurement for Inlet Protection. Standardized Special Provision (STSP) 645-040 previously included these provisions.

628.4.18 Temporary Ditch Checks, Delivered

Add this new subsection to specify the method of measurement for a new bid item Temporary Ditch Checks, Delivered. Standardized Special Provision (STSP) 628-040 previously included these provisions. See bid items added.

628.4.19 Temporary Ditch Checks, Installed

Add this new subsection to specify the method of measurement for a new bid item Temporary Ditch Checks, Installed. Standardized Special Provision (STSP) 628-045 previously included these provisions. Stone or Rock Ditch Checks are covered under STSP 628-050.

See bid items added.

628.4.20 Culvert Pipe Ditch Checks

Add this new subsection to specify the method of measurement for a new bid item Culvert Pipe Ditch Checks. Standardized Special Provision (STSP) 628-055 previously included these provisions.

See bid items added.

628.5.4 Erosion Bales, Installed

Revise this subsection to require the contractor to clean excess sediment and maintain erosion bales for the duration of the project.

628.5.13 Polyethylene Sheeting

Add this new subsection to specify the basis of payment for Polyethylene Sheeting. The department will no longer pay for delivery and installation separately as Standardized Special Provisions (STSP's) 628-014 and 628-015 prescribed. Polyethylene Sheeting is now a single item that includes delivery and installation.

See also Bid Items Added.

628.5.14 Turbidity Barriers

Add this new subsection to specify the basis of payment for Turbidity Barriers. Standardized Special Provision (STSP) 628-020 previously included these provisions.

See also Bid Items Added.

628.5.15 Soil Stabilizer

PREFACE

Add this new subsection to specify the basis of payment for Soil Stabilizer. Standardized Special Provisions (STSP's) 628-030 and 628-035 previously included these provisions.

See also Bid Items Added.

628.5.16 Inlet Protection

Add this new subsection to specify the basis of payment for Inlet Protection. Standardized Special Provision (STSP) 645-040 previously included these provisions.

See also Bid Items Added.

628.5.17 Temporary Ditch Checks, Delivered

Add this new subsection to specify payment for Temporary Ditch Checks, Delivered. Special Provision (STSP) 628-040 previously included these provisions.

See also Bid Items Added.

628.5.18 Temporary Ditch Checks, Installed

Add this new subsection to specify payment for Temporary Ditch Checks, Installed. Special Provision (STSP) 628-045 previously included these provisions. Stone or Rock Ditch Checks are covered under STSP 628-050.

See also Bid Items Added.

628.5.19 Culvert Pipe Ditch Checks

Add this new subsection to specify payment for Culvert Pipe Ditch Checks. Special Provision (STSP) 628-055 previously included these provisions.

See also Bid Items Added.

631.1 Description

Revise this subsection to retire the old sodding item and describe three new sodding bid items:

- Lawn Sod.
- Erosion Control Sod.
- Erosion Control Sod, Sandy Soil.

These new items are added to assure that the contractor uses the type of sod best suited to the aesthetics, soil type, and anticipated maintenance for each portion of the project. The goal is to improve the survivability of the sod. The existing Sodding is retired. Designers should begin using the three new items on all new plans.

See also Bid Items Added and Bid Items Retired.

631.2.1 Sod

Revise this subsection to define the characteristics of the sod for three new sodding bid items:

- Lawn Sod.
- Erosion Control Sod.
- Erosion Control Sod, Sandy Soil.

The old sodding item is retired and these new items are added to assure that the contractor uses the type of sod best suited to the aesthetics, soil type, and anticipated maintenance for each portion of the project. The goal is to improve the survivability of the sod.

See also Bid Items Added and Bid Items Retired.

631.4 Method of Measurement

Revise this subsection to describe measurement of the three new sodding bid items:

PREFACE

- Lawn Sod.
- Erosion Control Sod.
- Erosion Control Sod, Sandy Soil.

The existing Sodding item is retired. Designers should begin using the three new items on all new plans.

See also Bid Items Added and Bid Items Retired.

631.5.1 Sodding

Revise this subsection to describe payment for the three new sodding bid items:

- Lawn Sod.
- Erosion Control Sod.
- Erosion Control Sod, Sandy Soil.

The existing Sodding item is retired. Designers should begin using the three new items on all new plans.

See also Bid Items Added and Bid Items Retired.

633.2.1 Delineator Posts

Revise paragraph one to relax the delineator post requirement from 2 pounds per lineal foot (0.9 kg/300 mm) to 1.12 pounds per lineal foot (0.5 kg/300 mm).

633.2.3.2 Reflecting Requirements

Revise the units and values for specific intensity to correct a metric conversion error made when the "Blue Book" was published. The correct units are candelas/lux. Also dual dimensions are now provided for specific intensity values.

636.3.4 (Vacant)

Delete this subsection. The department no longer requires grout under the base plates of sign supports.

636.5.1 Concrete Masonry

Revise this subsection to eliminate the reference to grout. The department no longer requires grout under the base plates of sign supports.

641.2.9 Overhead Sign Supports

Revise paragraph one to clarify that the department reviews but does not approve shop drawings. The contractor should submit shop drawings, signed and sealed by a registered professional engineer, to the project engineer before erecting sign supports.

641.3.3 Steel Sign Bridges

Delete paragraph six. The department no longer requires grout under the base plates of sign supports.

PREFACE

646.4.7 Locating No-Passing Zones

Revise the sight distance requirements to correct errors in the spotting sight distance in the "Where authorized" row and the minimum distance between zones for 70 or 80 km/h. The correct values are 420 meters and 201 meters respectively. Also dual dimensions are now provided for all table values.

658.1 Description

Delete backplates from the description section. The backplate bid item was retired with the 99 supplement.

658.2.5 (Vacant)

Delete the subsection describing backplate materials. The backplate materials and installation details are included in the general notes of SDD's 9 E 1-3a, b, & c.

BID ITEMS ADDED

New items are introduced as required to support changes to the standard specifications. The department is now also creating new bid items, with standard numbers, to support changes introduced in the standardized special/provisions. These items are available to designers using the associated STSP's and are designed to smooth the transition from STSP to standard spec for selected provisions. We will retire the associated existing items and the STSP's upon implementation as supplemental spec. Designers are encouraged to use the STSP's and new items on all new PS&E's.

Add these additional standard specification bid items effective with the 2000 supplement:

20424	Removing Marker Posts
40721	Asphaltic Concrete Pavement, Type E-0.3
40722	Asphaltic Concrete Pavement, Type E-1
40723	Asphaltic Concrete Pavement, Type E-3
40724	Asphaltic Concrete Pavement, Type E-10
40725	Asphaltic Concrete Pavement, Type E-30
40726	Asphaltic Concrete Pavement, Type E-30x
40727	Asphaltic Concrete Pavement, Type SMA
40728	Density Incentive Asphaltic Concrete Pavement
62855	Polyethylene Sheeting
62860	Turbidity Barriers
62865	Soil Stabilizer, Type A
62866	Soil Stabilizer, Type B
62870	Inlet Protection, Type A
62871	Inlet Protection, Type B
62872	Inlet Protection, Type C
62875	Temporary Ditch Checks, Delivered
62876	Temporary Ditch Checks, Installed
62880	Culvert Pipe Ditch Checks
63110	Lawn Sod
63111	Erosion Control Sod
63112	Erosion Control Sod, Sandy Soil
65939	Luminaire Arms, Truss Type, 6-inch Clamp, 15-Foot
65940	Luminaire Arms, Truss Type, 6-inch Clamp, 12-Foot
65941	Luminaire Arms, Truss Type, 6-inch Clamp, 10-Foot
65944	Luminaire Arms, Single Member, 6-inch Clamp, 6-Foot

PREFACE

Add these standardized special provision bid items effective with the 2000 supplement:

65040	Construction Staking, Storm Sewer System
65045	Construction Staking, Subgrade
65050	Construction Staking, Crushed Aggregate Base Course
65055	Construction Staking, Curb, Gutter, and Curb and Gutter
65060	Construction Staking, Pipe Culverts
65065-65069	Construction Staking, Structure Layout, Structure
et seq.	
65070	Construction Staking, Concrete Pavement
65075	Construction Staking, Concrete Barrier
65080	Construction Staking, Resurfacing Reference
65085-65089	Construction Staking, Electrical, Project
et seq.	
65099	Construction Staking, Initial Layout

BID ITEMS RETIRED

Retire the Mobilization, Project ____ bid item, et sequence numbers 61911-61925. Using this item has been discouraged by the department in rule 5 of FDM procedure 19-5-15. Mobilization should be prorated between multiple projects of a single proposal using bid item 61910 Mobilization.

Retire these additional bid items effective with the 2000 supplement:

20503	Unclassified Excavation
40712	Asphaltic Concrete Pavement, Type HV
40713	Asphaltic Concrete Pavement, Type MV
40714	Asphaltic Concrete Pavement, Type LV
61911-61925	Mobilization, Project ____
et seq.	
63101	Sodding

ERRATA SHEET

There is no change to the errata sheet published with the supplemental specifications - 1999 edition.

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ERRATA

Errata Sheet	Inside back cover
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PART I GENERAL REQUIREMENTS AND COVENANTS

SECTION 101 DEFINITIONS AND TERMS

Add the following definition:

Consulting Firm The individual, partnership, joint ventures, corporation or agency contracted by the department to act directly or as a duly authorized construction representative providing services for the department.

Replace the following three definitions:

Bidder Any individual, partnership, joint venture, corporation, limited liability company, limited liability partnership, or a combination of any or all jointly, submitting a proposal (bid) for the work advertised in the invitation for bids, acting directly or through a duly authorized representative.

Contractor The individual, partnership, joint venturers, corporation, limited liability company, limited liability partnership or agency undertaking the performance of the work under the terms of the contract and acting directly or through a duly authorized representative.

Working Day A calendar day, except Saturdays, Sundays, specified legal holidays, and the period from November 16 to March 31, both dates inclusive, on which weather or other conditions not under the control of the contractor will permit construction operations to proceed for at least 8 hours of the day with the normal working force engaged in performing the controlling item of work which would be in progress at this time.

102.5 Preparation of Proposal

Replace paragraph one with the following:

- (1) The bidder shall submit the proposal on the form furnished or in the format approved by the department. In lieu of using the department's schedule of items, the bidder may submit a computer generated substitute schedule with the proposal. The substitute schedule shall be in a format conforming to the department's guidelines for approval of computer generated schedule of items and must be approved in writing by the department prior to use, or the substitute schedule shall be in a format generated through use of department supplied computer software. The proposal shall be executed properly, and shall clearly specify a unit price in dollars and cents, in numerals, for each item listed therein and shall also show, in numerals, in the column provided for that purpose, the products of the respective unit prices and quantities, and the total amount of the bid obtained by adding the extended amounts of the several items. A lump sum item should be shown as the same price in dollars and cents in the unit price column and in the extended amount column pertaining to that item. If one column is left blank for a lump sum item, the single amount shown will be used to obtain the total amount of the bid.

Replace paragraph six with the following:

- (6) A proposal submitted by an individual shall be signed by the bidder or by a duly authorized agent. A proposal submitted by a partnership or a limited liability partnership shall be signed by a member or by a duly authorized agent thereof. A proposal submitted by a joint venture shall be signed by a member or by a duly authorized agent of at least one of the firms. A proposal submitted by a corporation shall be signed by an authorized officer or duly authorized agent of such corporation, and the proposal shall show the name of the State under the laws of which such corporation was chartered. A proposal submitted by a limited liability company shall be signed by a duly authorized agent of the company. The required signatures shall in all cases appear in the space provided therefor on the proposal. All addenda to the contract shall be attached to the submitted proposal by the bidder.

102.6 Irregular Proposals

Replace paragraph four with the following:

- (4) If on a computer generated schedule of items the item number is correct and the description is incorrect, then the description will be corrected to reflect the department's form and line number sequencing.

102.7 Proposal Guaranty

Replace the entire text with the following:

- (1) No proposal will be considered unless accompanied by properly executed bid bond, of not less than 5 percent of the total bid, on the department's form contained in the proposal, or cashier's check, certified check, bank's check or postal money order in the amount designated on the proposal and payable to the department. Certified checks shall be drawn on the account of the bidder submitting the proposal.
- (2) The bidder may also meet the above requirements by having a properly executed annual bid bond of not less than 5 percent of the total bids on file with the department. The annual bid bond shall be on the form provided by the department.
- (3) The surety issuing the bid bond must have an equivalent A.M. Best rating of A- or better and be licensed to do business in the State of Wisconsin.
- (4) If alternate bids are invited and submitted, the bidder may submit one proposal guaranty in the total amount required for the combined alternate which will also be considered as covering each individual proposal.

102.11 Competency of Bidders

Replace paragraph two with the following:

- (2) Any individual, partnership, corporation, joint venture, limited liability company or limited liability partnership desiring to bid on any work under the jurisdiction or management of the department shall furnish the department a statement on a form provided by the department, which statement shall fully develop the financial ability, adequacy of plant, equipment and organization, prior experience and other pertinent and material facts required; certificates for insurance Types 1, 2 and 3 as required by 107.26 shall be included.

102.12 Disqualification of Bidders

Replace item three with the following:

3. More than one proposal for the same work from an individual, partnership, joint venture, corporation, limited liability company or limited liability partnership under the same or different names.

103.1 Consideration of Proposals

Replace paragraph five with the following:

- (5) Proposals will be considered irregular and will be rejected as nonresponsive if any of the unit bid prices are significantly unbalanced to the potential detriment of the department.

104.6.1 General

Add the following to the end as paragraph ten:

- (10) Flagging and guidance of traffic shall be done according to the latest revision of Part VI, Traffic Controls for Construction and Maintenance Operations of the Wisconsin Manual on Uniform Traffic Control Devices, the provisions of section 643, the contract, and as the engineer directs. Flagging and guidance services, and signs associated with flagging and guidance, will be considered incidental to the items of work in the contract.

105.3 Conformity with Plans and Specifications

Replace paragraph eight with the following:

- (8) If the engineer determines that noncomplying work or materials may remain in place, the contract change order for the unit price adjustment will include a \$400.00 lump sum credit to the department for administrative costs, which credit shall cover all items contained in the contract change order.

Add the following to the end as paragraph nine:

- (9) If a portion of the work cannot be constructed in accordance with the SI metric system dimensions and values shown in the plans, specifications or contract provisions, the contractor may construct that portion of the work to essentially equivalent U.S. standard measure system dimensions and values, if written approval of the engineer has been obtained before construction of the work under consideration is started.

106.1 Source of Supply and Quality

Delete paragraphs eight, nine, and ten.

Add the following to the end as paragraphs thirteen and fourteen:

- (13) The contractor may substitute a product manufactured or fabricated to the U.S. standard measure system of measurement for a product manufactured or fabricated to the SI metric system of measurement, if the following requirements are met:
 - 1. The substitute product shall be manufactured or fabricated from the same material as the original product, and shall comply with the U.S. standard measure system version of the specification requirement for the original product.
 - 2. Dimensions of the substitute product shall be essentially equal to dimensions of the original product. Established manufacturing and fabrication tolerances will be permitted except where absolute maximum or minimum dimensions are specified in the contract.
- (14) The contractor shall certify to the engineer in writing that the substitute product complies with the above requirements. The contractor shall not furnish the substitute product until the engineer has approved the product substitution in writing. There shall be no credit to the department or additional payment to the contractor for such substitution.

107.12 Responsibility for Damage and Tort Claims

Replace paragraph one with the following:

- (1) The contractor and the contractor's insurer shall defend, indemnify and save harmless the State, its officers, agents (in this context, agents exclude consulting firms, Wisconsin Counties and Municipalities and their respective officers and employees) and employees, from all suits, actions or claims of any character brought because of any injuries or damages received or sustained by any person, persons or property on account of the operations of the contractor; or on account of or in consequence of any neglect in safeguarding the work, or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect or misconduct of the contractor; or because of any claims or amounts recovered for any infringement by the contractor of patent, trademark or copyright; or from any claims or amounts arising or recovered under the Worker's Compensation Act, relating to the contractor's employees; or any other law, ordinance, order or decree relating to the contractor's operations. So much of the money due the contractor under and by virtue of the contract as shall be considered necessary by the department for such purposes, may be retained for the use of the State until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the department. The contractor shall also comply with all of the above requirements defending, indemnifying and saving harmless the county, town or municipality in which the improvement is made and each of them separately or jointly and their officers, agents and employees.

Delete paragraph three.

107.17.1 General

Replace paragraph four with the following:

- (4) The contractor shall provide a minimum of 10 feet (3 m) clearance, measured horizontally and at right angles from the centerline of the track, for all temporary construction.
-

107.17.3 Railroad Insurance Requirements

Replace the entire text with the following:

- (1) If required by the special provisions, the contractor shall provide or arrange for a subcontractor to provide railroad protective liability insurance in addition to the types and limits of insurance required in 107.26. The contractor shall keep railroad protective liability insurance coverage in force until completing all work, under or incidental to the contract, on the railroad right-of-way or premises of the railroad and until the department has accepted the work as specified in 105.12.
- (2) The contractor shall provide railroad protective liability insurance coverage written as specified in 23 CFR part 646 subpart A. The contractor shall provide a separate policy for each railroad naming that railroad as the insured for the following:
 1. The railroad owning the affected right-of-way and premises.
 2. Other railroads operating on the track by agreement with the owner.
- (3) The contractor shall ensure that the railroad protective liability insurance policies provide the following minimum limits of coverage:
 1. Coverage A, bodily injury liability and property damage liability; \$2 million per occurrence.
 2. Coverage B, physical damage to property liability; \$2 million per occurrence.
 3. An annual aggregate amount of \$6 million that shall apply separately to each policy renewal or extension.

- (4) The contractor shall submit the following to each railroad company as evidence of that railroad's respective coverage:
 - 1. A certificate of insurance for the types and limits of insurance specified in 107.26.
 - 2. The railroad protective liability insurance policy or other acceptable documentation to that railroad company.
 - (5) The contractor shall submit the following to the department as evidence of the required coverage:
 - 1. A copy of the letter to the railroad company transmitting the submittal documents specified in 107.17.3(4).
 - 2. A certificate of insurance for the required railroad protective liability coverages.
 - (6) The contractor shall not begin work on the right-of-way or premises of the railroad company until the department receives the submittals specified in 107.17.3(5) and notification from the railroad company that the contractor has provided sufficient insurance information to begin work.
 - (7) The contractor shall notify the department at least 60 calendar days before a cancellation or material change in coverage. The contractor shall only obtain coverage from insurance companies licensed to do business in Wisconsin that have an A.M. Best rating of A- or better. The cost of providing the required insurance coverage and limits is incidental to the contract cost. The department will make no additional or special payment for providing insurance.
-

107.22 Contractor's Responsibility for Utility Property and Services

Replace paragraph four with the following:

- (4) If utility facilities or appurtenances not identified in the contract are found, the engineer will determine whether adjustment or relocation of the utility is necessary to accommodate contract work. Arrangements will be made by the engineer with the utility or the contractor for adjustment or relocation deemed necessary by the engineer. Such work done by the contractor will be compensated as specified in 104.5.

Add the following to the end as paragraph five:

- (5) When specified in the contract, the requirements of administrative rule, TRANS 220 will apply.
-

107.25 Archeological and Historical Findings

Replace the entire text with the following:

- (1) Whenever the construction operations encounter human remains, or artifacts believed to be of archeological or historical significance, the contractor shall immediately cease operations at the encounter site and the contractor shall notify the responsible state agency or agencies, as the case may be. The contractor shall comply with directions of the responsible state agency or agencies, and shall cooperate in any necessary moving of construction operations from the site. Work may be continued elsewhere on the project unless the engineer directs otherwise. Operations at the encounter site shall not resume until allowed by the responsible state agency or agencies.

Add the following new subsection:

107.26 Standard Insurance Requirements

- (1) The contractor shall maintain the following types and limits of commercial insurance in force until such time as all work under or incidental to the contract has been completed by the contractor and accepted by the department:

TYPE OF INSURANCE	MINIMUM LIMITS REQUIRED ^[1]
1. Commercial general liability insurance; shall be endorsed to include blanket contractual liability coverage.	\$2 Million Combined single limits per occurrence; may be subject to an annual aggregate limit of not less than \$4 Million.
2. Workers' compensation and employers' liability insurance.	Workers' compensation limits: statutory limits Employers' liability limits: Bodily injury by accident: \$100,000 each accident Bodily injury by disease: \$500,000 each accident \$100,000 each employee
3. Commercial automobile liability insurance; shall cover all contractor-owned, non-owned, and hired vehicles used in carrying out the contract.	\$1 million-combined single limits per occurrence.

^[1] These requirements may be satisfied either through primary insurance coverage or through excess/umbrella policies.

- (2) Each bidder shall provide the department with certificates of insurance as evidence that required coverages for insurance types 1, 2 and 3 are in force. The certificates shall be provided at the time of prequalification in accordance with requirements of 102.11.
- (3) A 60 day notice of cancellation or material change in coverage will be required. All coverage shall be placed with insurance companies licensed to do business in the State of Wisconsin that have an A.M. Best rating of A- or better. The department reserves the right to require other coverage and limits as detailed in the special provisions. The cost of providing the required insurance coverage and limits shall be considered incidental to the contract and no additional or special compensation will be made therefor.
- (4) The above insurance requirements shall apply with equal force whether the work under the project is performed by the contractor, by a subcontractor or by anyone directly or indirectly employed by either of them.

Add the following new subsection:

107.27 Third Party Beneficiary

- (1) This contract does not create anyone as a third party beneficiary. This contract does not authorize non-parties to the contract to maintain actions for damages under the contract.

108.7 Determination and Extension of Contract Time for Completion

Replace paragraph one with the following:

- (1) The time for completion of the work contemplated under the contract will be specified in the proposal as a specific number of calendar days including Saturdays, Sundays and holidays, subject to the provisions of 108.13.1; as a specific number of working days, excluding Sundays, Saturdays, New Year's day, Martin Luther King Jr. day, Memorial day, Independence day, Labor day, Thanksgiving day, Christmas Eve day, Christmas day, New Year's Eve day and the period from November 16 through March 31, both dates inclusive, subject to the provisions of 108.12.2; or as a given calendar date on or before which the work shall be completed. The completion of work within the time as specified is an essential part of the contract.
-

108.8 Liquidated Damages

Replace the entire text with the following:

- (1) If the contractor does not complete the work within the contract time or within the extra time allowed under engineer-granted time extensions, the department will assess liquidated damages. The department will deduct a specified sum from payments due the contractor for every calendar day on calendar day contracts and completion date contracts, or for every working day on working day contracts, that the work remains uncompleted.
- (2) This deducted sum is not a penalty but is a fixed, agreed, liquidated damage due the department from the contractor by reason of inconvenience to the public, the added cost of engineering and supervision, maintenance of detours, and other items that have caused an expenditure of public funds resulting from the contractor's failure to complete the work within the contract time.
- (3) Unless modified in the special provisions, the department will assess the following daily liquidated damages. The values shown reflect only the cost of engineering and supervision.

LIQUIDATED DAMAGES

ORIGINAL CONTRACT AMOUNT		DAILY CHARGE	
FROM MORE THAN	TO AND INCLUDING	CALENDAR DAY	WORKING DAY
\$ 0	\$ 100,000	\$ 215	\$ 430
\$ 100,000	\$ 300,000	\$ 280	\$ 560
\$ 300,000	\$ 500,000	\$ 535	\$ 1070
\$ 500,000	\$ 1,000,000	\$ 785	\$ 1570
\$ 1,000,000	_____	\$ 1210	\$ 2420

- (4) If the engineer allows the contractor to continue and finish the work or any part of it after the contract time expires, the department waives no rights under the contract.
-

108.12.2.1 General

Replace paragraph two with the following:

- (2) No working day charges will be assessed on Saturdays, Sundays, New Year's Day, Martin Luther King Jr. day, Memorial day, Independence day, Labor day, Thanksgiving day, Christmas Eve day, Christmas day, and New Year's Eve day, nor during the period from November 16 through March 31, both dates inclusive, even though work is performed on the controlling item, or on other days or times specified in the special provisions when work on the controlling item is prohibited, except that working day time charges will be assessed after November 15 for those contracts not completed to the stage required by the contract to be completed by November 16.

109.1.1 General

Replace the entire text with the following:

- (1) All work completed under contracts with the plans and schedule of items developed under the U.S. standard measure system, will be measured by the engineer according to the U.S. standard measure system. All work completed under contracts with the plans and schedule of items developed under the international system of units (SI), will be measured by the engineer according to the international system of units (SI). The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to standard engineering practice, as modified to meet departmental requirements. Measurements and methods will be documented in accordance with procedures specified by the department.
- (2) The completed work will be measured for final payment by the engineer, as specified for the various items elsewhere in the standard specifications, to determine the quantities of such items of work performed, and the contractor will be paid for the actual amount of work performed in accordance with the contract, as shown by the final measurements, with the following exceptions:
 1. An agreement has been made to compensate the contractor on the basis of plan quantity.

If the contractor and the engineer agree in writing the quantities of certain items or portions of items of work as set forth in the contract or on the plans, as originally drawn or subsequently corrected or revised, are in substantial agreement with actual quantities of work performed, compensation will be made based on the quantities set forth in the contract or on the plans, as originally drawn or subsequently corrected or revised, without measurement, and the contractor shall accept such compensation as full payment for such items, or portions of items, according to the provisions of 109.2.
 2. Contract change orders have been executed providing for methods of measurement other than provided elsewhere in the standard specifications for the various items.

The quantities of work measured for final payment will be determined by using the methods of measurement applicable to the various items as a result of the contract change orders.
 3. Plan dimension modifications have been requested by the contractor to accommodate a change from the SI metric system to the U.S. standard measure system and have been approved by the engineer.

The quantities to be measured for final payment will be the quantities of the various items actually constructed under the modified plan dimensions, or the quantities of the various items derived from the original plan dimensions, whichever is less.
 4. Substitution of an item manufactured to the U.S. standard measure system for an item manufactured to the SI metric system has been done in accordance with requirements of 106.1.

The quantity measured for final payment will be the quantity actually furnished and constructed.

109.2 Scope of Payment

Add the following to the end as paragraph four:

- (4) For contracts with the plans and schedule of items developed under the U.S. standard measure system, payment will be made under the U.S. Standard system units in the contract Schedule of Prices. For contracts with the plans and schedule of items developed under the metric international system of units (SI), payment will be made under the metric international system of units (SI) units in the contract schedule of items.

PART II EARTHWORK

201.2 Construction Methods

Replace paragraph two with the following:

- (2) Unless specifically designated otherwise on the plans or by the engineer; the contractor shall cut off and dispose of all trees, brush, shrubs, or other vegetation occurring within the clearing limits. Within the grubbing limits; the contractor shall remove debris not suitable for the roadway foundation, stumps and associated roots, logs, timber, brush, and matted roots to the following minimum depths:
 1. In cut areas, one foot (300 mm) below final subgrade.
 2. In embankment areas, one foot (300 mm) below the existing grade.
-

201.3.1 Forty Meter Unit

Replace the entire text with the following:

- (1) When so provided, the department will measure clearing or measure grubbing by the full 40 m survey unit along the roadway centerline or reference line. When 2 or more roadways occur, the department will measure clearing or measure grubbing by the full 40 m survey unit along the centerline or reference line of each roadway. For divided highways, units for each roadway will extend, in width, from 1.5 m outside the grading limit of that roadway to a line mid-way between the reference lines or centerlines for each roadway.
 - (2) Only 40 m survey units within which it is necessary to remove at least four trees or stumps 75 mm or over in diameter, or any tree or stump or combination of trees or stumps 75 mm or over in diameter whose diameter or total diameters equal or exceed 300 mm will be included for payment. The department will determine diameter as specified in 201.3.2.
 - (3) The department will pay for all units included for payment as full units.
-

204.1 Description

Replace paragraph one with the following:

- (1) This work consists of wholly or partially removing structural elements occurring as follows:
 1. Within the roadway and interfering with new construction.
 2. Within the limits of Obliterating Old Road, whether specified or found necessary and required.
 3. Outside the limits of construction and beyond the limits of Obliterating Old Road, if specified.

Add the following between paragraphs one and two as paragraph one-a:

- (1a) The removals under 204.1(1) include pavements, surface and base courses, curb, gutter, curb and gutter, sidewalks and steps, lip curbs, concrete slope paving, marker posts, masonry, surface drains, railroad track, guardrail, fences, utility poles, concrete bases, buildings, septic tanks, underground tanks, manholes, catch basins, and inlets. This work includes material disposal and removal area backfilling; and if specified, site clearance and abandoning culvert pipes, manholes, catch basins, inlets, or wells.

Add the following to the end as paragraph eleven:

- (11) Removing Marker Posts consists of removing and stockpiling marker posts for others to salvage.

204.2.1 Breaking Down and Removing

Add the following to the end as paragraph twenty-eight:

- (28) The contractor shall avoid damaging marker posts during removal and store the removed posts in neat piles on the right-of-way for others to salvage. The contractor shall fill and tamp the resulting hole immediately after removal.

204.2.2 Abandoning Pipes and Structures

Replace paragraph twelve with the following:

- (12) Chips in the 6 mm to 10 mm range shall be used for sealing wells of 100 mm diameter, and chips in the 10 mm to 20 mm range shall be used for sealing wells larger than 100 mm diameter. The chips shall be screened prior to use to remove particles smaller than the smallest standard size in the selected range. The rate of pour into the well shall not exceed one 22.7 kg bag in 3 minutes to avoid bridging in the well.

204.3 Method of Measurement

Add the following to the end as paragraph twenty-five:

- (25) The department will measure Removing Marker Posts as each individual post acceptably removed and completed.

204.4 Basis of Payment

Add the following to the list of items in paragraph one:

Removing Marker Posts Each

Replace paragraph four with the following:

- (4) If the contract does not include items for removal of the listed miscellaneous structures from within the roadway, the department will measure and pay for excavation for those removals as Common Excavation, except the department will pay for excavation for removal of concrete structures exceeding one cubic yard (m^3) and not otherwise specified for removal in the contract at 5 times the unit price bid for Common Excavation. Other work involved in the removal or abandonment within the roadway of those structures is incidental to other items of work. The department will determine the volume of excavation for removal of concrete structures as the area of the structure times the depth removed.

205.2.1 General

Replace the entire text with the following:

- (1) The department classifies excavation as Common Excavation, Rock Excavation, Stone Piles and Stone Fences, or Marsh Excavation. If the contract contains Common Excavation and Rock Excavation, the engineer will classify that excavation as either common or rock, based on unfrozen material, as the contractor performs the work.
- (2) The department classifies all excavation below subgrade outside of marshes as Common Excavation or Rock Excavation.

205.2.2 Common Excavation

Replace the entire text with the following:

- (1) Common Excavation consists of the excavation of all materials not classified as Rock Excavation, Stone Piles and Stone Fences, or Marsh Excavation. For contracts without Rock Excavation, the department will pay 5 times the contract bid price of Common Excavation to remove boulders having volumes of one cubic yard (m^3) or more.

205.2.6 Unclassified Excavation

Delete the entire text and replace the subsection heading with the following:

205.2.6 (Vacant)

205.3.1 Preparing Roadway Foundation

Replace paragraphs one and two with the following:

- (1) Vegetation of a height greater than one foot (300 mm) shall be cut and properly disposed of before ground is broken for excavation or before embankment is placed thereon. Heavy sod, perishable material, unstable topsoil, and other undesirable foundation material underlying proposed roadway embankments within the limits of the assumed one to one slopes extending outward from the outer limits of the finished shoulders shall be removed. Muck, peat and other unstable material shall be removed, disposed of, or otherwise treated as shown on the plans.
 - (2) All suitable topsoil material within the areas of excavation and within the limits described above for embankment areas, necessary and suitable to cover the slopes for the items of Salvaged Topsoil or Topsoil, shall be removed as Salvaged Topsoil as specified in 625.3.2 "Processing Topsoil or Salvaged Topsoil". Unstable topsoil lying within the limits described above for embankment areas, in excess of amounts necessary to cover the slopes for the items Salvaged Topsoil or Topsoil, shall be removed as specified in 205.3.3 and paid for as Excavation Below Subgrade.
-

205.3.3 Excavation Below Subgrade

Replace paragraph one with the following:

- (1) The contractor shall remove deposits of frost-heave material, unstable silty soils, wet and unstable soil, material salvaged from old road cores in marshes, topsoil containing considerable amounts of humus or vegetable matter, rocks, or other undesirable foundation material to the depth below finished grade as the plan shows or the engineer directs. If feasible, the contractor shall slope and drain the excavation bottoms to prevent water accumulation.
-

205.5.1 Excavation

Replace paragraph two with the following:

- (2) For minor quantities, the engineer may elect to measure Common Excavation by the cubic yard (m^3) in the vehicle. The engineer will determine the capacity of each haul vehicle to the nearest 0.1 cubic yard (0.1 m^3).
-

205.6.1 Excavation

Replace paragraphs one and two with the following:

- (1) The department pays for Common Excavation, Rock Excavation, Stone Piles and Stone Fences, and Marsh Excavation, as measured above, at the contract unit price. That price is full compensation for all work specified under section 205 for which no separate unit prices are included in the contract, except as otherwise specified in sections 203 and 204 for the removal of concrete structures and for excavation below subgrade performed after completion of rough grading operations. The cost of removing walls, foundations, etc., the satisfactory disposal of material resulting therefrom, and the backfilling of basements or openings resulting from the removal of walls, foundations, etc., for which no separate unit prices are included in the contract, is included in the contract unit price for excavation items, except for the removal of concrete structures. No extra or additional compensation will be made for that work, except payment for furnishing and placing the required Granular Backfill will be made at the contract unit price for that item, and, except as specified above for the removal of concrete structures and excavation below subgrade performed after completion of rough grading. Such payment shall include full compensation for all equipment, tools, labor and incidentals necessary to complete the work. The contract unit price shall include all haul except as outlined in 205.4.
- (2) The department will pay for excavation below subgrade (EBS), performed after the rough grading operations are complete in the EBS area and requiring the contractor's return to perform the EBS,

at 3 times the unit price bid for Common Excavation. The department will measure EBS as specified in 205.5.1.

206.3.12 Backfill

Replace the entire text with the following:

206.3.12.1 Materials

- (1) Material used for backfill shall be of a quality acceptable to the engineer and shall be free from frozen lumps, wood or other extraneous or perishable material. Approved material from excavation may be used for backfilling unless Structure Backfill is specified. When Structure Backfill is specified, material from excavation meeting the requirements for Structure Backfill may be used for backfilling in accordance with the provisions of 104.8. Stone used in backfilling shall be enveloped entirely by finer material.

206.3.12.2 Construction Methods

206.3.12.2.1 General

- (1) All spaces excavated and not occupied by the new structure shall be backfilled to the elevation and section existing prior to excavation, except backfill shall not be placed above the required section for the finished work. Backfill shall be sufficient to provide allowance for settlement.
- (2) Except as required for the safety of workers, substructure units shall not be backfilled until the area involved shall have been cleared of all falsework, sheet piling, cribbing, shoring, bracing, forms, and rubbish. Cofferdams shall be backfilled prior to removal of sheeting, unless otherwise permitted by the engineer.
- (3) When required for the safety of workers and with the approval of the engineer, sheet piling, cribbing, shoring, and bracing may be removed as backfilling progresses.
- (4) Backfilling shall be so performed as to prevent wedging action against the structure. Existing slopes shall be stepped, terraced or otherwise treated as necessary to prevent slippage and wedging of the backfill.
- (5) Unless otherwise specified, backfill shall be placed in continuous horizontal layers not more than 8 inches (200 mm) thick that are brought up uniformly, as far as practicable, on all sides of each substructure unit or culvert. Each layer shall be adequately compacted, before the next layer is placed, by means of approved rollers or portable mechanical or pneumatic tampers or vibrators.
- (6) If there is water in an excavation, backfilling operations in the excavation shall be so performed that such water will be displaced by the backfill and not trapped therein. Water shall not be used to expedite settlement of backfill except with the written approval of the engineer, but this provision shall not require an excavation to be dewatered before placing backfill. When the use of water is permitted, the entire excavation shall be kept inundated during the period that backfill is placed, except when jetting is allowed.
- (7) Backfilling operations shall be conducted in such a manner that no portion of the structure is damaged or deflected out of alignment. Backfilling material transported in trucks or other vehicles shall be dumped so that the contents of each vehicle are gradually deposited instead of dumping the entire contents as one mass. Insofar as practicable, all clams, dippers and similar containers of backfill shall be lowered to within 5 feet (1.5 m) of the surface of the previously deposited backfill, or of the water surface, before they are dumped.
- (8) Backfill may be end dumped from the structure or approach embankment if the material is spread and placed in the above-described 8 inches (200 mm) horizontal layers after it is end dumped. Backfill shall not be placed in or from narrow ramps or driveways up to or from the structure.
- (9) Backfilling of structural plate pipe and pipe arches shall be accomplished as specified in 527.4.2.
- (10) Backfill along the front face of abutments, retaining walls, and wing walls shall extend to within 6 inches (150 mm) of the weep holes, unless otherwise designated.

- (11) When weep holes are designated on the plans for culverts, abutments, and retaining walls there shall be placed behind the culvert, abutment or retaining wall at the level of the weep holes a deposit or deposits of coarse gravel or broken stone. The dimensions of those deposits shall conform to the dimensions indicated on the plans.
- (12) Backfill shall not be placed against any portion of any substructure unit until the required curing, surface preparation, dampproofing, and waterproofing of the work to be covered by backfill has been completed.

206.3.12.2.2 Self-Supported Abutments and Retaining Walls

206.3.12.2.2.1 General

- (1) Self supported structures must develop sufficient strength before they can be backfilled.

206.3.12.2.2.2 Backfill on One Side of the Structure

- (1) The Contractor may backfill structures that have attained the specified compressive strength or upon expiration of the minimum time periods tabulated below:

STRUCTURE TYPE ^[1]	GENERAL PURPOSE CONCRETE in days ^[2]	HIGH EARLY STRENGTH CONCRETE in days ^[2]	COMPRESSIVE STRENGTH in psi (MPa)
Abutment type A1, A2, A5	2	1	2000 (13.8)
Abutment type A3 ^[3]	2	1	2000 (13.8)
Abutment type A4	14	7	3000 (20.7)
Full retaining abutments	14	7	3000 (20.7)
Concrete masonry retaining walls	14	7	3000 (20.7)

^[1] Abutment types:

A1: Body about 5 feet (1.5 m) tall with 1 row of piles.

A2: Body about 5 feet (1.5 m) tall with 2 rows of piles.

A3: Body about 5 feet (1.5 m) tall with backwall and 2 rows of piles

A4: Body about 13 feet (4 m) tall with backwall and 2 or more rows of piles.

A5: Body about 10 feet (3 m) tall with 1 row of piles extending to within 2 feet (0.6 m) of abutment top.

Full retaining: Body extending from lower roadway/river elevation to beam seats.

^[2] Only count days where the concrete temperature did not fall below 40 F (4 C).

^[3] Upon obtaining the required compressive strength, the contractor may backfill the body of A3 abutments before the backwall is placed.

206.3.12.2.2.3 Backfill on Both Sides of the Structure

- (1) Footings may be backfilled to the top of the footings, sill abutments may be backfilled to the berm elevation, and retaining walls and piers may be backfilled uniformly and simultaneously on both sides to the elevation of the front ground surface immediately upon removal of the forms.

206.3.12.2.3 Rigid Frame Structures

- (1) Backfill shall not be placed against any abutment or wall which is designed to gain support from a superstructure until the superstructure has been poured and cured.
- (2) One quarter of total wall height of box culverts may be backfilled after the wall compressive strength has reached 2000 pounds per square inch (13.8 Mpa). Box Culverts may be backfilled entirely after concrete in the top of the box has been poured and cured.

206.3.13 Disposal of Excavated Material

Replace paragraph one with the following:

- (1) The contractor may use suitable excavated material as riprap or backfill. If the contract contains Common Excavation or Borrow Excavation items and there is a need for material in the

embankment at the time of disposal, the contractor shall use suitable excavated material, not used as riprap or backfill, in the embankment. The department will pay for excavated material used in embankments at the contract unit price for Borrow Excavation, or absent a Borrow Excavation item, at the contract unit price for Common Excavation. The department will determine the quantity of excavated material used in embankments as specified in 205.5.1. The contractor shall not overhaul excavated material placed in embankments.

PART III BASE COURSES

304.1 Description

Replace paragraphs one and two with the following:

- (1) Crushed Aggregate Base Course consists of a dense graded compacted base course composed of one or more courses or layers of coarse aggregate, either crushed gravel or crushed concrete or crushed stone or crushed asphaltic pavement; fine aggregate; and binder or filler. Aggregate produced from crushed gravel, crushed concrete, or crushed stone may be supplemented with crushed aggregate produced from industrial by-products or recycled/reclaimed materials as described in 304.2.1. All materials shall be blended as necessary to produce an intimate mixture of the required gradation and stability, constructed on the prepared foundation in accordance with the specifications and in reasonably close conformity with the lines, grades, thicknesses and typical cross-sections shown on the plans or established by the engineer.
- (2) Crushed Aggregate Base Course, Open Graded, consists of an open graded, compacted base course composed of one or more courses or layers of coarse aggregate, either crushed gravel or crushed concrete or crushed stone, and fine aggregate. Aggregate produced from crushed gravel, crushed concrete, or crushed stone may be supplemented with crushed aggregate produced from industrial by-products or recycled/reclaimed materials as described in 304.2.1. All materials shall be blended as necessary to produce an intimate mixture of the required gradation and stability, constructed on the prepared foundation in accordance with the specifications and in reasonably close conformity with the lines, grades, thicknesses and typical cross-sections shown on the plans or established by the engineer.

Replace paragraph seven with the following:

- (7) (Vacant)

Replace paragraph eight with the following:

- (8) Salvaged Asphaltic Pavement, Base Course, consists of the necessary processing of the stockpile, loading, hauling and placing salvaged asphaltic pavement as base course, at the locations shown on the plans or as the engineer directs, in accordance with the specifications.

304.2.1 General Conditions

Add the following to the end as paragraph five:

- (5) Limited amounts of aggregate produced from an allowed industrial by-product or an allowed recycled/reclaimed material may be blended with crushed gravel, crushed concrete, or crushed stone. Specific materials and allowable percentages, by weight, are listed in 304.2.3. These materials shall be substantially free of deleterious substances and shall be crushed, screened, and blended with the crushed gravel, crushed concrete, or crushed stone to produce a uniform mixture. This blended material shall contain only one industrial by-product or one recycled/reclaimed material. This blended material shall not be used in the upper 3 inches (75mm) of Crushed Aggregate Base Course used as an aggregate shoulder or in the upper 3 inches (75mm) of a temporary or permanent aggregate roadway.

304.2.3 General Requirements

Replace the entire text with the following:

- (1) The aggregates for Crushed Aggregate Base Course consists of hard, durable particles of crushed stone or crushed concrete or crushed gravel and a filler of natural sand, stone sand or other finely divided mineral matter. The aggregates for Crushed Aggregate Base Course, Open Graded, consists of hard, durable particles of crushed stone or crushed gravel or crushed concrete. Except for applications excluded in 304.2.1, Crushed Aggregate Base Course and Crushed Aggregate Base Course, Open Graded may contain up to the listed maximum percent, by weight, of one of the following permitted industrial by-products or recycled/reclaimed materials:

MATERIAL	MAXIMUM PERCENT (by weight)
Glass	12
Foundry slag	7
Steel mill slag	15
Bottom ash	8
Pottery cull	7

- (2) Oversize material encountered in deposits from which the material is taken shall be removed by screening or shall be crushed to the required sizes. The composite material shall be substantially free from vegetable matter, shale and lumps or balls of clay, and shall conform to the pertinent gradation requirements.
- (3) Unless otherwise specified in the contract, the aggregate, including any industrial by-product or recycled/reclaimed material, shall have a percentage of wear of not more than 50, as determined according to AASHTO T 96.
- (4) The aggregate, including any blended filler and any industrial by-product or recycled/reclaimed material, shall have a liquid limit of not more than 25 and a plasticity index of not more than 6, except in the case of aggregates for base courses placed between old and new pavements, where the plasticity index shall not exceed 3.
- (5) For aggregate for crushed aggregate base course, a minimum of 45 percent, by count, of the number of particles of aggregate retained on the number 4 (4.75 mm) sieve shall have at least one fractured face.
- (6) For aggregate for open graded base course, a minimum of 90 percent, by count, of the number of particles retained on the number 4 (4.75 mm) sieve shall have at least one fractured face.

304.2.3.1 (Vacant)

304.2.3.2 Salvaged Asphaltic Pavement, Base Course

- (1) Stockpiled salvaged asphaltic pavement material to be used as base course, gradation number 1, as specified in 304.2.6, shall be processed as necessary so 100 percent will pass a 1 1/2 inch (37.5 mm) sieve.
- (2) Stockpiled salvaged asphaltic pavement material to be used as base course, gradation number 2 or number 3, as specified in 304.2.6, shall be processed as necessary so 100 percent will pass a one-inch (25.0 mm) sieve.
- (3) Other requirements of 304.2 shall not apply.

304.2.4 Soundness

Replace the entire text with the following:

- (1) When the fraction of the aggregates, including any industrial by-product or recycled/reclaimed material, retained on the number 4 (4.75 mm) sieve is subjected to 5 cycles of the sodium sulfate soundness test according to AASHTO T 104, the weighted loss shall not exceed 18 percent by mass for crushed aggregate base course, or 12 percent for crushed aggregate base course, open graded, unless otherwise specified in the contract. If the quality of material or conditions of deposition in a quarry or deposit make questionable the continuous compliance with this soundness requirement, the engineer reserves the right to require maintenance of a stockpile or stockpiles of produced material sufficiently large to preclude use of material which has not been previously approved by test.

304.2.6 Gradation Requirements

Replace paragraph three with the following:

- (3) Unless otherwise specified in the special provisions; the contractor shall use gradation number 3 in the top 3 inches (75 mm) of unpaved or unstabilized shoulders adjacent to live traffic lanes or paved shoulders, and use either gradation number 2 or number 3 in the balance of the shoulder.

304.2.7 Sampling and Testing

Replace paragraph one with the following:

- (1) Sampling and testing will be according to the following AASHTO methods, except as revised with the engineer's approval:

Sampling aggregates	T 2
Material finer than number 200 (75 µm) sieve	T 11
Sieve analysis of aggregates	T 27
Sieve analysis of mineral filler	T 37
Liquid limit of soils	T 89
Plastic limit of soils	T 90
Plasticity index of soils	T 90
Los Angeles abrasion of coarse aggregate	T 96
Specific gravity and absorption of fine aggregate	T 84
Specific gravity and absorption of coarse aggregate	T 85 ^[1]
Sodium sulfate soundness of aggregates	T 104

^[1] As revised by the department's method T 85-1.

304.9.1 General

Replace paragraph one with the following:

- (1) The department will measure Crushed Aggregate Base Course; Crushed Aggregate Base Course, Detours; Salvaged Crushed Aggregate Base Course; Producing and Stockpiling Crushed Aggregate Base Course; Hauling and Placing Crushed Aggregate Base Course; Crushed Aggregate Base Course, Open Graded Number (-); and Salvaged Asphaltic Pavement, Base Course by the ton (Mg), or in the vehicle by the cubic yard (m³) whichever the contract specifies. The department will measure material acceptably completed either in place or in stockpiles.

Replace paragraph six with the following:

- (6) The department will measure Shaping Shoulders in partial 100 foot survey stations (m) along each side of the traveled way.

304.10 Basis of Payment

Replace paragraph two with the following:

- (2) The department will pay for Crushed Aggregate Base Course, Open Graded Number (_), as measured above, at the contract unit price. That price is full compensation for furnishing, producing, crushing, screening, loading, hauling, placing, watering unless otherwise specified, drying and compacting; for maintaining; for preparing foundation, unless otherwise specified; for dust abatement, unless otherwise specified; for stockpiling, if required; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

Delete paragraph six.

Replace paragraph seven with the following:

- (7) The department will pay for Salvaged Asphaltic Pavement, Base Course, as measured above, at the contract unit price. That price is full compensation for the necessary processing of the stockpile, loading, hauling, placing and compacting; for maintaining; for preparing foundation; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

306.7.1 Asphaltic Base Course

Replace paragraph one with the following:

- (1) The department will pay for Asphaltic Base Course, as measured above, at the contract unit price. That price is full compensation for furnishing all materials, except asphaltic materials; for preparing, mixing, hauling, placing and compacting; for preparing foundation, unless otherwise provided; and for all labor, tools, equipment and incidentals, including maintenance until acceptance, necessary to complete the work.

306.7.2 Asphaltic Base Course Widening

Replace paragraph one with the following:

- (1) The department will pay for Asphaltic Base Course Widening, as measured above, at the contract unit price. That price is full compensation for all excavation, reconstructing earth shoulders, satisfactory disposal of surplus or unsuitable excavated material; for the preparation and compaction of the foundation; for furnishing, preparing, handling, placing and consolidating the asphaltic mixture; for furnishing all materials, except asphaltic materials; and for all labor, tools, equipment and incidentals necessary to satisfactorily complete the work.

307.3.1.3 Curing of Concrete

Replace the subsection heading and the entire text with the following:

307.3.1.3 Opening Concrete Base Course to Traffic

- (1) The procedures and opening criteria for Concrete Base Course shall be the same as specified in 415.5.15 for grade A concrete used in concrete pavement; except when the contractor takes measures to prevent loading within 6 inches of the edge:
 1. The engineer will allow the contractor to open Concrete Base Course to traffic when the concrete reaches 2000 pounds per square inch (13.8 MPa).
 2. In the absence of compressive strength information, the engineer may allow the contractor to open Concrete Base Course upon the expiration of 3 equivalent curing days.

308.3.2 Concrete Patching

Replace paragraph three with the following:

- (3) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10.

308.5 Basis of Payment

Replace paragraph one and two with the following:

- (1) The department will pay for Base Patching; Base Patching, Asphaltic; or Base Patching, Concrete, as measured above, at the contract unit price. That price is full compensation for furnishing all materials, except pavement ties and dowel bars installed in the existing concrete pavement; for the removal of old pavement, including any patching or surfacing materials, with the exception of sawing; for all excavation, except as hereinafter provided; for the preparation of the foundation, including all necessary cutting and trimming, filling of depressions to shape the subgrade to grade and section and satisfactory compaction; for disposal of all removed or excess materials; for furnishing, placing, consolidating, finishing and curing concrete masonry; for furnishing, placing and compacting asphaltic mixture, including the asphalt; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.
- (2) The department will pay for Special High Early Strength Base Patching, Concrete, as measured above, at the contract unit price. That price is full compensation for furnishing all materials, except pavement ties and dowel bars installed in the existing concrete pavement; for removal of existing concrete pavement, with the exception of sawing; for all excavation except as hereinafter provided; for the preparation of foundation; for the disposal of removed or excess materials; for furnishing, placing, consolidating, finishing, curing and protecting concrete masonry; for preparing and testing concrete cylinders and providing test data; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

PART IV PAVEMENTS

401.2.3 General Requirements

Replace paragraph two with the following:

- (2) The department may prohibit the use of crushed stone from limestone/dolomite deposits having thinly bedded strata or strata of a shaley nature. The department may also prohibit the use of aggregates from deposits or formations known to produce unsound material.

401.2.4 Soundness

Replace the subsection heading and the entire text with the following:

401.2.4 Sodium Sulfate Soundness

- (1) The department will conduct 5 cycles of the sodium sulfate soundness test, according to AASHTO T 104, on aggregate retained on the number 4 (4.75 mm) sieve. The weighted loss shall not exceed 12 percent.
- (2) When all aggregates used in the work are produced from the same deposit or source, the test may be made on a composite sample. The composite sample will contain the job mix formula percentages of each component aggregate. When the component aggregates are produced from more than one deposit or source, the tests will be made on one sample from each deposit or source.

401.2.7 Sampling and Testing

Replace paragraph one with the following:

- (1) Sampling and testing will be according to the following AASHTO methods, except as revised with the engineer's approval:

Sampling aggregates	T 2
Material finer than number 200 (75 µm) sieve	T 11
Sieve analysis of aggregates	T 27
Mechanical analysis of extracted aggregate	T 30
Sieve analysis of mineral filler	T 37
Liquid limit of soils	T 89
Plastic limit of soils	T 90
Plasticity index of soils	T 90
Los Angeles abrasion of coarse aggregate	T 96
Freeze-thaw soundness of coarse aggregate	T 103
Sodium sulfate soundness of aggregates	T 104
Extraction of bitumen	T 164

401.3.1 General Requirements

Replace paragraph five with the following:

- (5) The grade of penetration graded or viscosity graded asphaltic materials, including asphalt emulsions used for tack coat, may be changed by the contractor one step at no change in unit price when permitted by the engineer in writing. No change in the grade of performance graded asphaltic materials will be permitted.

401.3.4 Asphalt, Type AC

Delete the text and table previously added in Supplemental Specifications - 1997 Edition.

Add the following to the end as paragraph five:

- (5) Performance graded asphalt cements shall meet the binder specifications and test method tolerances as tabulated in the most recent edition of the department's "Certification Method of Acceptance for Asphalt Cements".

402.2 Materials

Replace paragraph two with the following:

- (2) Asphaltic material shall be MS-2, SS-1, SS-1h, CSS-1, CSS-1h, or Modified Emulsified Asphalt, unless otherwise specified in the contract.

402.4.1 General

Replace paragraph three with the following:

- (3) The existing surface designated for tack coat treatment shall receive a coat of asphaltic material of the type and grade specified in the contract. The diluted tack coat material shall be applied at an estimated rate of 0.025 gallons per square yard (1L/10m²) of surface area unless otherwise specified in the contract. Daily application shall be limited to approximately that area of surface reasonably expected to be paved during the same day.

403.3.2 Laboratory Requirements

Replace paragraph three with the following:

- (3) The contractor shall accommodate the engineer's request to conduct calibration and condition inspections of the contractor's measuring and testing devices. The contractor shall calibrate and correlate all testing equipment according to the department's test method number 1559 and QMP procedure manual, and the requirements of AASHTO MP2 and AASHTO PP28.

403.3.3.1 Required Tests for a Contract of 4600 Megagrams of Mixture or Greater

Replace paragraph one with the following:

- (1) The contractor shall use the test methods identified below, or other methods the engineer approves, to perform the following tests at a frequency greater than or equal to that indicated:

Blended aggregate according to AASHTO T11 and T27:

Drum plants:

- Field extraction by department test method number 1560.
- Belt samples, optional for virgin mixtures, obtained from stopped belt or from the belt discharge using a sampling device approved by the engineer.

Batch plants:

- Field extraction by department test method number 1560.

Asphaltic content (AC) in percent:

AC by calculation.

AC by nuclear gauge reading, optional.

Bulk specific gravity of the compacted mixture according to AASHTO T166.

Maximum specific gravity according to AASHTO T209.

Air voids by calculation.

Voids in the mineral aggregate by calculation.

Replace paragraph eight with the following:

- (8) The split portion of the contractor asphaltic mixture and blended aggregate shall be retained for 14 calendar days at the laboratory site by the contractor. This 14-day retention period may be decreased if approved by the engineer. At the completion of the project, the remaining samples may be disposed of with the approval of the engineer. The samples shall be stored in a dry and protected location.

403.3.3.3 Required Tests for a Contract of Less Than 460 Megagrams of Mixture

Correct the subsection number.

Replace the entire text with the following:

- (1) The engineer may waive all testing. If all testing is waived, the department will not measure or pay for Quality Management Program, Asphaltic Mixture.

403.3.3.4 Required Tests for Temporary Pavements

Replace the entire text with the following:

- (1) Temporary pavements are defined as those pavements which will be placed and removed before the completion of the contract.
- (2) The engineer may waive all testing. If all testing is waived, the department will not measure or pay for Quality Management Program, Asphaltic Mixture.

403.3.4.2 Control Charts

Replace paragraph three with the following:

- (3) The contractor shall record the following data on the standardized control charts:
 - Blended aggregate gradation tests in percent passing. Of the following, plot those sieves the design specifications require: 37.5 mm, 25.0 mm, 19.0 mm, 12.5 mm, 9.5 mm, 2.36 mm, and 75 µm.
 - Asphalt content in percent.
 - Bulk specific gravity of the compacted mixture.
 - Maximum specific gravity.
 - Air voids in percent.
 - Voids in the mineral aggregate in percent.

403.3.5 Control Limits

Replace the entire text with the following:

- (1) The following control limits for the job mix formula and warning limits are based on a running average of the last 4 data points:

ITEM	JOB MIX FORMULA LIMITS	WARNING LIMITS
Percent passing given sieve:		
37.5 mm	± 6.0	± 4.5
25.0 mm	± 6.0	± 4.5
19.0 mm	± 5.5	± 4.0
12.5 mm	± 5.5	± 4.0
9.5 mm	± 5.5	± 4.0
2.36 mm	± 5.0	± 4.0
75 µm	± 2.0	± 1.5
Asphalt content in percent	± 0.4	± 0.3
Air voids in percent	± 1.3	± 1.0
Voids in the mineral aggregate in percent	- 1.5	- 1.2

403.4 Quality Assurance

Replace paragraph one with the following:

- (1) The engineer will test split samples taken from the contractor's quality control samples or from other samples as the engineer directs. The engineer may take a split from any contractor retained sample. The engineer will test a minimum of one split sample for each 15 contractor quality control tests the contract requires, taking at least one split from the first 2 days' production. The engineer will provide test results to the contractor within 2 mixture production days after the contractor takes the sample. An asphaltic technician certified at level one under the department's highway technician certification program, or a department certified assistant a level one directly supervises, will perform all assurance tests and analyze the data. The engineer will post the names and telephone numbers of all assurance personnel for the project.

Replace paragraph four with the following:

- (4) Differences between the contractor's and engineer's split sample test results are acceptable if within the following limits:

ITEM	ALLOWABLE DIFFERENCE
Percent passing given sieve:	
37.5 mm	6.5
25.0 mm	6.5
19.0 mm	6.0
12.5 mm	6.0
9.5 mm	6.0
2.36 mm	4.0
75 µm	2.0
Bulk specific gravity of the compacted mixture	0.030
Maximum specific gravity	0.020

403.7 Basis of Payment

Add the following to the end as paragraph two:

- (2) If all testing is waived under 403.3.3.3 and 403.3.3.4, the department will not measure or pay for Quality Management Program, Asphaltic Mixture.
-

405.3.4 Tack Coat

Replace the entire text with the following:

- (1) Tack coat shall be applied, as specified in section 402, to each lower layer and to each upper layer, of a plant-mixed asphaltic base or pavement scheduled to be overlaid with asphaltic mixture under the same contract.

405.3.9.2 Thickness

Replace the entire text with the following

- (1) Leveling, lower, and upper layers shall conform with the thicknesses shown on the plans. The following thickness limits shall apply unless the plans specify otherwise:

NOMINAL SIZE	MINIMUM LAYER THICKNESS in inches (mm)	MAXIMUM LOWER LAYER THICKNESS in inches (mm)	MAXIMUM UPPER LAYER THICKNESS in inches (mm)
37.5 mm	3.5 (89)	5 (127)	4.5 (114)
25.0 mm	3.25 (83)	5 (127)	4 (102)
19.0 mm	2.25 (57)	4 (102)	3 (76)
12.5 mm ^[1]	1.75 (44)	3 (76) ^[2]	2.5 (64)
9.5 mm ^[1]	1.5 (38)	3 (76) ^[2]	2 (51)

^[1] SMA mixtures use nominal size 12.5 mm or 9.5 mm.

^[2] SMA mixtures with nominal sizes of 12.5 mm and 89.5 mm have no maximum lower layer thickness specified.

SECTION 407 ASPHALTIC CONCRETE PAVEMENT

Replace the entire text with the following:

407.1 Description

- (1) This work consists of mixture design, and construction of plant-mixed asphaltic concrete pavement on the approved prepared foundation, base course, or existing surface according to these specifications and conforming to the lines, grades, thickness and typical cross sections the plans show or the engineer establishes.
- (2) The requirements of section 405 apply to this work, except as otherwise specified within section 407.
- (3) For plans and special provisions developed using asphaltic concrete pavement mixture types HV, MV, LV, or superpave make the following substitutions throughout the contract:
 1. Substitute mixture type E-0.3 for mixture type LV, superpave, or superpave for shoulders.
 2. Substitute mixture type E-1, E-3, E-10, E-30, or E-30x, whichever is called for in the schedule of items, for mixture type MV, HV, or superpave.

407.2 Materials

407.2.1 General

- (1) All materials shall conform to the requirements of sections 401 and 405 except as otherwise specified within section 407. Mineral filler used in SMA mixtures shall conform to the requirements of section 401.2.5.1 and shall have a plasticity index of 4 or less. Virgin or resultant blended asphaltic material shall be as designated in the contract special provisions.

- (2) Interpret materials related abbreviations and acronyms used in section 407 as follows:

SMA	Stone matrix asphalt
RAP	Reclaimed asphaltic pavement
PG	Performance graded
JMF	Job mix formula
G_{mm}	Maximum specific gravity
VMA	Voids in mineral aggregate

407.2.2 Composition of Pavement Mixtures

407.2.2.1 General

- (1) Paving mixtures shall be a homogeneous mixture of coarse aggregate, fine aggregate, mineral filler, SMA asphalt concrete stabilizer when required, and asphaltic material. Mixtures made in the design laboratory with aggregates and asphalt cement proposed for the work shall meet the properties in tables 407-1 and 407-2. The contractor shall submit samples for mixture design review as required in the department's test method number 1559.

407.2.2.2 Contractor Asphaltic Mixture Design

- (1) The contractor shall submit, for each layer and for the engineer's review, an asphaltic mixture design meeting all necessary criteria. The asphaltic mixture design shall be conducted according to procedures in the latest version of AASHTO MP2, AASHTO PP28, and department's test method number 1559 and shall be signed by an asphaltic technician certified at level III. The department will review the quality of the aggregate and the asphaltic mixture design, and issue a report. The asphaltic mixture design shall be in effect until modified in writing by the engineer or for a maximum of 3 years whichever comes first.

TABLE 407-1 MIXTURE REQUIREMENTS

Mixture type	E - 0.3	E - 1	E - 3	E - 10	E - 30	E - 30x	SMA
ESALs x 10 ⁶ (20 yr design life)	< 0.3	0.3 - < 1	1 - < 3	3 - < 10	10 - < 30	≥ 30	—
LA Wear (AASHTO T 96)							
100 revolutions(max % loss)	13	13	13	13	13	13	13
500 revolutions(max % loss)	50	50	45	45	45	45	45
Soundness (AASHTO T 104) (sodium sulfate, max % loss)	12	12	12	12	12	12	12
Freeze/Thaw (AASHTO T 103) (specified counties, max % loss)	18	18	18	18	18	18	18
Fractured Faces (ASTM 5821) (one face/2 face, % by count)	60 / —	65 / —	75 / 60	85 / 80	98 / 90	100/100	100/90
Thin or Elongated (ASTM D4791) (max %, by weight)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	20 (3:1ratio)
Fine Aggregate Angularity (AASHTO T304, method A)	40	40	43	45	45	45	45
Sand Equivalency (AASHTO T 176)	40	40	40	45	45	50	50
Gyratory Compaction							
Gyrations for N _{ini}	6	7	7	8	8	9	8
Gyrations for N _{des}	40	60	75	100	100	125	100
Gyrations for N _{max}	60	75	115	160	160	205	160
Air Voids, %V _a (%G _{mm} @ N _{des})	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)
% G _{mm} @ N _{ini}	< 91.5 ^[1]	< 90.5 ^[1]	< 89.0 ^[1]	< 89.0	< 89.0	< 89.0	—
% G _{mm} @ N _{max}	≤ 98.0	≤ 98.0	≤ 98.0	≤ 98.0	≤ 98.0	≤ 98.0	—
Dust to Binder Ratio ^[2] (% passing 0.075/P _{be})	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	0.6 - 1.2	1.2 - 2.0
Voids filled with Binder (VFB or VFA, %)	70 - 80 [4] [5]	65 - 78 [4]	65 - 75 [4]	65 - 75 [3] [4]	65 - 75 [3] [4]	65 - 75 [3] [4]	70 - 80
Tensile Strength Ratio - TSR (ASTM 4867)							
no antistripping additive	0.70	0.70	0.70	0.70	0.70	0.70	0.70
with antistripping additive	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Draindown @ Production Temperature (%)	—	—	—	—	—	—	0.30

^[1] The percent maximum density at initial compaction is only a guideline.

^[2] For a gradation that passes below the boundaries of the caution zone(ref. AASHTO MP3), the dust to binder ratio limits are 0.6 - 1.6.

^[3] For 9.5mm nominal maximum size mixtures, the specified VFB range is 73 - 76%.

^[4] For 37.5mm nominal maximum size mixes, the specified VFB lower limit is 67%.

^[5] For 25.0mm nominal maximum size mixes, the specified VFB lower limit is 67%.

407.2.3 Acceptance of Pavement Mixtures

407.2.3.1 Quality Management Program

- (1) If the contract contains Quality Management Program, Asphaltic Mixture, acceptance of the asphaltic mixtures included under that item will be based on the provisions of section 403. The target maximum density will be determined based on the G_{mm} value using the method contained in the latest copy of the department's quality management program guide/procedure manual.

407.2.3.2 Quality Management Program not Required in Contract

- (1) The department's acceptance testing will be conducted by an asphaltic technician certified at level I. The engineer will conduct acceptance tests on samples taken by the contractor under the observation of and in a manner approved by the engineer. The tests will be conducted as specified in 403.3.3.1 for blended aggregate and asphalt content. The target maximum density will be determined by using the G_{mm} value indicated on the contractor's current mixture design.
- (2) The asphaltic mixture test results shall conform to the current JMF within the following single-test tolerances:

Percent Passing 12.5 mm and larger sieves.....	± 8 percent
Percent Passing 9.5 mm and 4.75 mm sieves.....	± 8 percent
Percent Passing 2.36 mm sieve.....	± 7 percent
Percent Passing 75 μ m sieve.....	± 2 percent
Asphaltic Material.....	± 0.5 percent
- (3) The engineer will base final acceptance of the mixture on the results of testing made on samples during the acceptance process. A request for a JMF adjustment may be made by the contractor with the approval of the engineer as specified in 403.3.7.

407.2.4 Aggregate

407.2.4.1 General

- (1) Aggregates shall consist of hard durable particles and shall not contain more than a combined total of one percent, by mass, of lumps of clay, loam, shale, soft particles, organic matter, adherent coatings, and other deleterious matter. The composite aggregates shall conform to the percent fractured faces, and thin or elongated requirements in table 407-1. For each aggregate that is a composite of materials from different deposits or sources, the material from each deposit or source shall have a percentage of wear which meets the requirements.
- (2) The contractor shall submit samples as required under the department's aggregate source approval policy, representative of the aggregate proposed to be used in the work, for aggregate quality testing. Samples shall arrive in the laboratory at least 14 days before use in the work. No aggregate shall be used in the production of mixtures without prior approval of the engineer. Sampling of aggregates shall be done by a technician certified to take samples.

407.2.4.2 Soundness

- (1) Aggregate shall conform to the soundness requirements of 401.2.4. In addition, the department will conduct freeze-thaw soundness tests, according to AASHTO T 103, on crushed stone aggregates produced from sources in limestone/dolomite formations in specified counties when those aggregate are used in upper layers. The department will test aggregate retained on the number 4 (4.75 mm) sieve using either method A with 50 cycles, method B with 16 cycles, or method C with 25 cycles. The weighted average loss shall not exceed 18 percent.

- (2) The department will conduct freeze-thaw tests on material from sources in the following counties:

Brown	Fond du Lac	Iowa	Oconto	Walworth
Columbia	Grant	Jefferson	Outagamie	Winnebago
Dane	Green	Lafayette	Rock	
Dodge	Green Lake	Marinette	Shawano	

- (3) The department may waive this requirement for soundness testing by freezing and thawing for existing quarries determined to be in either the Silurian system or the Prairie du Chien group of the Ordovician system of rocks in Wisconsin.
- (4) When all aggregates used in the work are produced from the same deposit or source, the test may be made on a composite sample. The composite sample shall contain the JMF percentages of each component aggregate. When the component aggregates are produced from more than one deposit or source, the tests will be made on one sample from each deposit or source.

407.2.4.3 Aggregate Gradation Master Range

- (1) The aggregates, RAP, and mineral filler when required, shall conform to the gradation requirements in table 407-2 based on their nominal size. Gradation values listed are extreme limits for design. Production testing tolerances may allow mixture production values that exceed the aggregate master range.

TABLE 407-2 AGGREGATE GRADATION MASTER RANGE AND VMA REQUIREMENTS

SIEVE SIZE	PERCENTS PASSING DESIGNATED SIEVES						
	NOMINAL SIZE						
	37.5 mm	25.0 mm	19.0 mm	12.5 mm	9.5 mm	SMA 12.5 mm	SMA 9.5 mm
50.0 mm	100						
37.5 mm	90 - 100	100					
25.0 mm	90 max	90 - 100	100				
19.0 mm	—	90 max	90 - 100	100		100	
12.5 mm	—	—	90 max	90 - 100	100	90 - 97	100
9.5 mm	—	—	—	90 max	90 - 100	58 - 72	90 - 100
4.75 mm	—	—	—	—	90 max	25 - 35	35 - 45
2.36 mm	15 - 41	19 - 45	23 - 49	28 - 58	20 - 65	15 - 25	18 - 28
75 µm	0 - 6	1 - 7	2 - 8	2 - 10	2 - 10	8 - 12	10 - 14
PERCENT MINIMUM VMA	11.0	12.0	13.0	14.0	15.0	15.5	16.5

- (2) Unless otherwise designated in the contract, the nominal size of the aggregate used in the mixture shall conform to the following:

PAVEMENT LAYER	NOMINAL SIZE
Lower layer pavement.....	19.0 mm
Upper layer pavement.....	12.5 mm
Stone matrix layer pavement.....	12.5 mm

407.2.5 Additives

407.2.5.1 Hydrated Lime Antistripping Agent

- (1) Hydrated lime, when used in asphaltic mixtures, shall meet requirements for hydrated lime in ASTM C 977 and shall be limited to a maximum of 8 percent unhydrated oxides as received. Hydrated lime shall be added at a rate of one percent or more by mass of the total dry aggregate. The method of introducing and mixing the lime and aggregate is subject to the engineer's approval before beginning production.

407.2.5.2 Liquid Antistripping Agent

- (1) When a liquid antistripping agent is used, it shall be added to the asphalt cement before introduction into the mix. If the engineer finds any antistripping agent or particular concentration of antistripping agent to be harmful to the asphalt material or which changes the characteristics of the original asphalt cement by more than ± 400 poises for viscosity or more than -4 or +10 for penetration, the antistripping agent or particular concentration shall be changed to comply with these characteristics.

407.2.5.3 Stone Matrix Asphalt, Asphalt Concrete Stabilizer

- (1) Asphaltic Concrete Pavement, Type SMA shall contain an asphaltic concrete stabilizer additive. The asphaltic concrete stabilizer additive shall be either an organic fiber, an inorganic fiber, a polymer-plastic, or a polymer-elastomer. The contractor shall select the additive system, asphaltic binder and stabilizer additive, however, only one type of additive system shall be used in all SMA pavement.
- (2) If proposing to use a stabilizer additive not listed in 407.2.5.3(1), the contractor shall submit the proposed additive system and material samples to the department at least 14 days before the project let date. The department will approve or reject that proposed system no later than 48 hours before the project let date.

407.2.6 Reclaimed Asphaltic Pavement Materials

- (1) The contractor may use up to 35 percent RAP material in lower layer and base mixtures and up to 20 percent in upper layer mixtures. The combined RAP and virgin aggregate shall meet the aggregate requirements from table 407-1.

407.2.7 Recovered Asphaltic Materials

- (1) The percentage of recovered asphaltic materials from RAP shall be established for the mixture design according to AASHTO T 164 using the appropriate dust correction procedure. When test results indicate that a change has occurred in the percentage of RAP, the contractor or the engineer may request a change in the design recovered asphaltic material from RAP. The request shall include at least 2 recent RAP extractions from the contractor's mixture design laboratory.
- (2) When PG asphaltic materials are specified in the contract, the contractor may use up to 25 percent RAP for lower layers and up to 20 percent RAP for upper layers without a change in PG grade. If greater amounts of RAP are used, the virgin asphaltic material shall have a low temperature property that is one PG grade lower than designated in the contract, unless contractor or supplier testing indicates that the resultant asphaltic material blend meets the PG grade originally specified in the contract.

407.3 Construction

407.3.1 General

- (1) Unless the contract specifies otherwise, the contractor may produce asphaltic concrete mixtures in either a batch or a drum plant. All equipment shall conform to the requirements of section 405.
- (2) The construction methods shall be as specified in section 405. All pavements shall be built using the maximum density method unless otherwise specified. Compaction of leveling layers, wedging layers, patching layers, driveways and other non-traffic areas will be accomplished according to the ordinary compaction procedure specified in 405.3.10.2.

407.3.2 Asphaltic Concrete Pavement Density, Maximum Density Method

407.3.2.1 Minimum Required Density

- (1) All layers of plant mixed asphaltic mixtures shall be compacted to the percent of the target maximum density shown in table 407-3 for the applicable mixture, location, and layer.

TABLE 407-3 MINIMUM REQUIRED DENSITY

LOCATION	LAYER	PERCENT OF TARGET MAXIMUM DENSITY		
		MIXTURE TYPE		
		E-0.3, E-1, and E-3	E-10, E-30, and E-30x	SMA
TRAFFIC LANES ^[1]	LOWER	91.5 ^[2]	92.0 ^[2]	94.0
	UPPER	91.5	92.0	94.0
SHOULDERS AND APPURTENANCES	LOWER	89.5	89.5	91.0 ^[3]
	UPPER	90.5	90.5	91.0 ^[3]

^[1] Includes parking lanes as determined by the engineer.

^[2] Minimum reduced by 2 percent for < 3 million ESALs and one percent for > 3 million ESALs, when the first lift of lower layer constructed on crushed aggregate or recycled base courses.

^[3] Minimum density will be 94.0 when the shoulders are paved integrally with the mainline pavement.

407.3.2.2 Pavement Density Determination

- (1) The engineer will determine the pavement density using the department's established methods. Before beginning the project the engineer and contractor shall agree on the method, either nuclear density or the density of sawed/cored samples. The engineer will establish random testing locations. When required, the contractor shall cut pavement samples from the completed work with power equipment and restore the surface with new, well compacted mixture for no additional compensation. Density determinations will be made as soon as practicable after placement and compaction and before placement of subsequent layers.
- (2) Compacted mixtures represented by samples or tests having deficient densities shall not be re-rolled.
- (3) The contractor shall not operate below the specified minimum density on a continuing basis. Production shall be stopped until the source of the problem is determined and corrective action is taken to bring the work into compliance with specifications.
- (4) A lot shall represent 750 tons (680 Mg) of a mixture placed within a single layer for each location and target maximum density category indicated in table 407-3.

- (5) When density is determined by the nuclear method, 5 random tests will be taken on each lot. The department's nuclear testing will be performed by a nuclear density technician certified at level I. When sawed or cored samples are used to determine density, 3 random samples, each at least 28 square inches (18,000 mm²) in size, will be tested from each lot. The lot density is the average of all samples taken for that lot.

407.4 Measurement

- (1) The department will measure Asphaltic Concrete Pavement acceptably completed by the ton (Mg) as specified in 405.4.
- (2) The department will measure Producing and Stockpiling Aggregates for Asphaltic Concrete Pavement acceptably produced and stockpiled by the ton (Mg) or by the cubic yard (m³).

407.5 Payment

407.5.1 Asphaltic Concrete Pavement

407.5.1.1 General

- (1) The department will pay for Asphaltic Concrete Pavement, as measured above, at the contract unit price subject to one or more of the following adjustments:
1. Disincentive for asphaltic concrete pavement density as specified in 407.5.1.2.
 2. Incentive for asphaltic concrete pavement density as specified in or 407.5.1.3.
 3. Reduced payment for defective smoothness as specified in 405.5.1.3.
 4. Reduced payment for unsatisfactory mixtures as specified in 403.3.8.
- (2) For Asphaltic Concrete Pavement, Type E-0.3, E-1, E-3, E-10, E-30, or E-30x, that price is full compensation for providing asphaltic mixture designs, furnishing, preparing, hauling, mixing and placing of all materials, except asphaltic materials; for compacting mixtures; for preparing foundation, unless otherwise provided; and for all labor, tools, equipment, and incidentals, including maintenance, necessary to complete the work.
- (3) For Asphaltic Concrete Pavement, Type SMA, that price is full compensation for providing asphaltic mixture designs, furnishing, preparing, hauling, mixing and placing of all materials, including asphaltic materials, asphalt concrete stabilizer, and hydrated lime or liquid antistripping agent when required; for compacting mixtures; for preparing foundation, unless otherwise provided; and for all labor, tools, equipment, and incidentals, including maintenance, necessary to complete the work.
- (4) If provided for in the plan quantities the department will measure and pay for a leveling layer, placed to correct irregularities in an existing paved surface before overlaying, under the pertinent paving item. Absent a plan quantity, the department will pay for a leveling layer as extra work.
- (5) Except for SMA mixes, the department will pay for asphaltic materials separately under Asphaltic Materials for Plant Mixes as specified in 405.5.2. Except for SMA mixes, hydrated lime or liquid antistripping agent, when required, is included in the contract price for the asphaltic material.

407.5.1.2 Disincentive for Asphaltic Concrete Pavement Density

- (1) If the lot density is less than the specified minimum in table 407-3, the department will reduce pay under Asphaltic Concrete Pavement and Asphaltic Material for Plant Mixes for that lot as follows:

DISINCENTIVE PAY REDUCTION FOR ASPHALTIC CONCRETE PAVEMENT DENSITY

PERCENT LOT DENSITY BELOW SPECIFIED MINIMUM	PAYMENT FACTOR (percent of contract price)
From 0.5 to 1.0 inclusive	98
From 1.1 to 1.5 inclusive	95
From 1.6 to 2.0 inclusive	91
From 2.1 to 2.5 inclusive	85
From 2.6 to 3.0 inclusive	70
More than 3.0	See footnote ^[1]

- ^[1] The lot shall be removed and replaced with a mixture at the specified density and, when acceptably replaced, will be paid for at the contract unit price per ton (Mg); or the engineer may permit the unacceptable material to remain in place with a 50 percent payment factor.

407.5.1.3 Incentive for Asphaltic Concrete Pavement Density

- (1) If the lot density is greater than the minimum specified in table 407-3 and all individual air voids test results for that mixture placed during the same day are within +1.0 percent or - 0.5 percent of the design target in table 407-2, the department will adjust pay for that lot as follows:

INCENTIVE PAY ADJUSTMENT FOR ASPHALTIC CONCRETE PAVEMENT DENSITY

PERCENT LOT DENSITY ABOVE SPECIFIED MINIMUM	PAY ADJUSTMENT PER LOT ^[1]
From -0.4 to 1.0 inclusive	\$ 0
From 1.1 to 1.8 inclusive	\$ 300
More than 1.8	\$ 600

- ^[1] The department will prorate the pay adjustment for a partial lot.
- (2) The department will adjust pay under Density Incentive, Asphaltic Concrete Pavement. Adjustment under this item is not limited, either up or down, to the amount shown on the schedule of items.

407.5.2 Producing and Stockpiling Aggregates for Asphaltic Concrete Pavement

- (1) The department will pay for Producing and Stockpiling Aggregates for Asphaltic Concrete Pavement, as measured above, at the contract unit price. That price is full compensation for furnishing, producing, crushing, screening, loading, hauling and stockpiling; for preparing the stockpile site; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

410.1 Description

Replace the entire text with the following:

- (1) Salvaged Asphaltic Pavement consists of the complete removal of existing asphaltic surfacing at the locations required by the contract or as the engineer directs, together with hauling and stockpiling of the salvaged material.
- (2) Salvaged Asphaltic Pavement, Milling consists of removing and salvaging existing asphaltic pavement by milling at the location and to the thickness the contract indicates, or the engineer directs, together with hauling and stockpiling the salvaged material.
- (3) Unless otherwise required in the contract, all salvaged asphaltic pavement material not incorporated in the work shall become the property of the contractor.

410.3.1 Salvaged Asphaltic Pavement

Replace paragraph one with the following:

- (1) The existing asphaltic pavement shall be removed in its entirety, taking all practical care to avoid incorporation of or damage to the underlying materials. Inclusion of excessive amounts of underlying materials or of aggregates from shoulders shall be cause for immediate suspension of the work until corrective procedures are instituted. The asphaltic pavement thus removed shall be stockpiled at a location which will permit incorporation in the asphaltic base, asphaltic pavement or salvaged asphaltic pavement, base course.

Delete paragraphs three and four.

410.3.2 Salvaged Asphaltic Pavement, Milling

Delete paragraphs three, six, and seven.

410.5 Basis of Payment

Replace the entire text with the following:

- (1) The department will pay for Salvaged Asphaltic Pavement, as measured above, at the contract unit price. That price is full compensation for removing, hauling, and stockpiling; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.
- (2) The department will pay for Salvaged Asphaltic Pavement, Milling, as measured above, at the contract unit price. That price is full compensation for removal by milling, hauling, and stockpiling, and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

Add the following section:

SECTION 411. ASPHALTIC SURFACE

411.1 Description

- (1) Asphaltic Surface consists of the construction of a plant mixed asphaltic surface on the approved prepared foundation, base course or existing surface in accordance with the specifications and in reasonably close conformity with the lines, grades, thicknesses and typical cross sections the plans show and as the engineer directs.
- (2) Asphaltic Surface, Detours consists of furnishing and placing an asphaltic surface conforming to the above requirements at various locations and depths on the detour route, as the plans show and as the engineer directs.
- (3) Asphaltic Surface, Patching consists of furnishing and placing an asphaltic surface conforming to the above requirements at various patching locations and depths as the engineer directs.
- (4) Asphaltic Surface, Safety Islands consists of furnishing and placing an asphaltic surface at the safety island locations and depths, as the plans show or as the engineer directs.
- (5) Asphaltic Surface, Driveways and Field Entrances consists of furnishing and placing an asphaltic surface at the various driveway and field entrance locations and depths, as the plans show or as the engineer directs.
- (6) Asphaltic Surface, Temporary consists of furnishing and placing a temporary asphaltic surface at the locations and depths as the plans show or as the engineer directs.

411.2 Materials

- (1) The requirements of section 401 shall not apply to this work except as required in section 407 for type E-0.3, E-1, or E-3 mixtures.

411.3 Composition of Mixture

- (1) Asphaltic Surface; Asphaltic Surface, Detours; and Asphaltic Surface, Patching shall meet the mixture requirements for either type E-0.3, E-1, or E-3 as specified in section 407.
- (2) The asphaltic mixture for the items of Asphaltic Surface, Safety Islands; Asphaltic Surface, Driveways and Field Entrances; and Asphaltic Surface, Temporary consists of an intimate mixture of coarse and fine mineral aggregates, with or without salvaged or reclaimed asphaltic pavement materials, uniformly coated and mixed with a type AC asphaltic material in a suitable mixing plant.

411.4 Construction Methods

411.4.1 General

- (1) The requirements of section 403 shall not apply to this work. The requirements of section 405 shall not apply to this work except as hereinafter specified.
- (2) The mixture for the items of Asphaltic Surface, Safety Islands and Asphaltic Surface, Patching may be placed by hand methods described in 405.3.9.

411.4.2 Compaction

- (1) Compaction for the items of Asphaltic Surface; Asphaltic Surface, Detours; Asphaltic Surface, Patching; Asphaltic Surface, Driveways and Field Entrances; and Asphaltic Surface, Temporary shall be accomplished by the ordinary compaction procedure as described in 405.3.10.2.
- (2) Compaction for Asphaltic Surface, Safety Islands shall be accomplished to the extent the engineer directs.

411.4.3 Surface Requirements

- (1) The surface produced under the items of Asphaltic Surface; Asphaltic Surface, Detours; and Asphaltic Surface, Temporary shall be tested with a 3 m straightedge and shall show no variation greater than 6 mm from the testing edge of the straightedge between any 2 contracts with the surface. All humps and depressions exceeding the specified tolerance shall be corrected by removing defective work and replacing it with new material or by other methods of repair the engineer approves.
- (2) The surface produced under the items of Asphaltic Surface, Patching; Asphaltic Surface, Safety Islands; and Asphaltic Surface, Driveways and Field Entrances shall be smooth and contoured as the engineer directs.

411.5 Maintenance

- (1) The contractor shall be responsible for maintaining the asphaltic surface produced under Asphaltic Surface, Temporary. Maintenance shall be done at no additional cost to the department and shall be done to the satisfaction of the engineer for the time period specified in the contract. Maintenance furnished by the contractor shall include all labor, materials, equipment, tools and incidentals needed to accomplish the work.

411.6 Method of Measurement

- (1) The department will measure all items described in 411.1 by the ton (Mg) as specified in 405.4.
- (2) The department will not measure asphaltic materials, required for and incorporated in the mixture, separately for payment.

411.7 Basis of Payment

- (1) The department will pay for Asphaltic Surface; Asphaltic Surface, Detours; Asphaltic Surface, Patching; Asphaltic Surface, Safety Islands; and Asphaltic Surface, Driveways and Field Entrances, as measured above, at the contract unit price. That price is full compensation for providing an asphaltic mixture design, when required; for furnishing, preparing, hauling, mixing and placing of all materials, including asphaltic material and any salvaged or reclaimed asphaltic pavement materials; for compacting the mixture; for preparing the foundation; and for all labor, tools, equipment and incidentals necessary to complete the work.
 - (2) The department will pay for Asphaltic Surface, Temporary, as measured above, at the contract unit price. That price is full compensation for furnishing, preparing, hauling, mixing and placing all materials, including asphaltic material and any salvaged or reclaimed asphaltic pavement materials; for compacting the mixture; for preparing the foundation; for maintenance during the time period specified in the contract; and for all labor, tools, equipment and incidentals necessary to complete the work.
-

415.2.2 Concrete

Replace paragraph two with the following:

- (2) The contractor shall provide grade A, A2, A3, A-S, A-S2, A-IS, A-FA or A-IP Air-Entrained Concrete, as specified in section 501, except as otherwise specified for Special High Early Strength Concrete Pavement Repair in 416.2.5 and for Concrete Pavement Repair in 416.2.4.
-

415.2.5 Concrete Curing Agents

Replace the entire text with the following

415.2.5.1 Liquid Membrane-Forming Compounds

- (1) The contractor shall provide liquid curing compound conforming to AASHTO M 148, type 2, except for water retention testing. The department will conduct water retention tests according to AASHTO T 155, except as follows:
 1. The edges of the specimen will not be sealed.
 2. The curing compound will be applied at one gallon per 200 square feet (0.20 L /m²) of surface or at the manufacturer's recommended rate whichever is greater.

415.2.5.2 Burlap

- (1) The contractor shall provide burlap conforming to AASHTO M 182, Class 3 or 4. The contractor may use 2 layers of Class I or 2 in lieu of one layer of Class 3 or 4.

415.2.5.3 (Vacant)

415.2.5.4 Polyethylene Sheeting

- (1) The contractor shall provide polyethylene sheeting conforming to AASHTO M 171 for white opaque polyethylene film.

415.2.5.5 Polyethylene-Coated Burlap

- (1) The contractor shall provide polyethylene-coated burlap conforming to AASHTO M 171 for white burlap-polyethylene sheet.

415.5.4 Consistency

Replace the entire text with the following:

- (1) A uniform consistency shall be continuously maintained in consecutive batches of concrete. Slump tests of concrete will be made according to AASHTO T 119. Slump for various techniques shall be as follows:

SLIP-FORMED	NOT SLIP-FORMED WITH INTERNAL VIBRATION	NOT SLIP-FORMED WITH SURFACE VIBRATION
2.5 inches (65 mm) or less	One to 3 inches (25 to 75 mm)	1.5 to 3 inches (38 to 75 mm)

415.5.6.2 Placing Continuous Pavement Reinforcement

Replace the entire text with the following:

- (1) After the subgrade has been properly prepared, the bar steel reinforcement shall be placed. The longitudinal bars shall be placed on top of the transverse bars and firmly tied or fastened together at each intersection. The assembled bars shall be supported on bar chairs with bars located at a depth as shown on the plans. The bar chairs shall meet the approval of the engineer and shall be sufficient in strength and number to hold the steel reinforcement in required position during the construction operations.
 - (2) Splices of longitudinal bars shall be made with the bars lapped as shown on the plans and firmly tied or fastened together. The arrangement of splices shall be as shown on the plans. Additional steel reinforcement as shown on the plans shall be installed at construction joints.
 - (3) All bar steel reinforcement left protruding from the slab for any extended period of time shall be protected from deterioration caused by exposure.
 - (4) The bar steel reinforcement shall not be bent or subjected to loading or forces which distort the steel or weaken the bond with the concrete.
 - (5) Coated bars shall be tied using a procedure, equipment, and materials that will not damage or cut the coating. Ties for use with coated reinforcement shall be an approved plastic or nonmetallic material; stainless steel wire; or nylon, epoxy, or plastic-coated wire.
-

415.5.8 Transverse Joints

Replace paragraph three with the following:

- (3) Dowel bar baskets shall be of an approved type and firmly maintain the dowels in their correct position and alignment during construction. No bonded longitudinal bars or reinforcement shall extend across a transverse expansion or contraction joint.
-

415.5.9.8.2 Profilograph

Add the following to the beginning as paragraph one:

- (1) The provisions of 415.5.9.8.2 shall be applicable to the work when required by special provision in the contract.

415.5.10 Curing of Concrete

Replace the entire text with the following:

415.5.10.1 General

- (1) The contractor shall maintain adequate moisture throughout the concrete mass to support hydration until the concrete has developed sufficient strength to open it to service. The contractor shall cure all concrete by one or a combination of the following methods:
 1. Impervious coating.
 2. Impervious sheeting.
 3. Continuous wet cure.
 4. Alternate method approved by the engineer.
- (2) If the contractor fails to cure concrete as specified here in 415.5.10, the engineer may suspend concrete placement operations.

415.5.10.2 Impervious Coating Method

- (1) After finishing operations, and as soon as the free water has disappeared, the contractor shall spray the concrete surface with a uniform coating of curing compound meeting the requirements for curing agents specified in 415.2.5.1. The contractor shall seal moisture in the concrete by applying a continuous water-impermeable film on all exposed concrete surfaces.
- (2) The contractor shall provide sufficient agitation during the spraying operation to ensure uniform consistency and dispersion of pigment within the curing compound as applied.
- (3) The contractor shall apply the curing compound with an approved self-propelled mechanical power sprayer where practical. The contractor may use hand-operated spraying equipment for:
 1. Irregular, narrow, or variable width sections.
 2. Re-coating applications or after form removal.
 3. Special applications as approved by the engineer.
- (4) For tined surfaces, the contractor shall apply the curing compound uniformly at a minimum rate of one gallon per 150 square feet (0.27 L/m^2). For all other surface finishes, the contractor shall apply the curing compound uniformly at a minimum rate of one gallon per 200 square feet (0.20 L/m^2).
- (5) If the curing compound coating is damaged within 72 hours after being applied, the contractor shall recoat the affected area without delay. When forms are removed within 72 hours after placement of the concrete, the contractor shall coat newly exposed surfaces within 30 minutes after form removal.

415.5.10.3 Impervious Sheeting Method

- (1) As soon as the concrete has been finished and has hardened sufficiently to prevent excessive marring, the contractor shall cover all exposed concrete surfaces with one or a combination of the following impervious sheeting materials:
 1. Polyethylene sheeting meeting the requirements for curing agents specified in 415.2.5. 4.
 2. Polyethylene-coated burlap meeting the requirements for curing agents specified in 415.2.5.5. The polyethylene-coated burlap should be prewetted and placed with the uncoated side against the concrete.
 3. When approved by the engineer, insulated curing blankets with an impervious coating.
 4. Alternate impervious sheeting materials approved by the engineer.

- (2) The contractor shall provide sheeting material sufficient to cover all exposed edges, with enough excess to hold the material securely in place by weighting or an alternate anchoring method. The contractor shall provide a minimum of 12 inches (300 mm) overlap between adjacent pieces of sheeting. The contractor shall place the sheeting material so that it is in direct contact with all exposed concrete surfaces.
- (3) The contractor shall maintain the sheeting material in place until the concrete meets the opening criteria specified in 415.5.15. Where temporary removal is required to remove forms or perform other necessary work, the Contractor shall re-cover all exposed concrete as quickly as practical, or as the engineer directs.
- (4) If approved by the engineer, the contractor may reuse sheeting materials that are in serviceable condition.

415.5.10.4 Continuous Wet Cure Method

- (1) As soon as the concrete has been finished and has hardened sufficiently to prevent excessive marring, the contractor shall spray or fog the exposed surfaces of the concrete to keep it moist until the concrete meets the opening criteria specified in 415.5.15. The contractor may choose to apply a layer of thoroughly wetted burlap to protect the surface from the mechanical impact of the spray.
- (2) If there is evidence that the concrete surface is being eroded by the curing water, the engineer will immediately suspend the spraying or fogging. The contractor shall remedy the conditions causing erosion or switch to another curing method.
- (3) When ambient temperatures are predicted to fall below 40 F (5 C) within the next 24 hours, the contractor shall suspend continuous wet curing and switch to another curing method.

415.5.10.5 Alternate Curing Methods

- (1) If requested by the contractor, the engineer may approve the use of alternate materials or curing methods. If requested by the engineer, the contractor shall supply technical specifications, test results, or performance records to support their proposed alternative method.

415.5.13 Cold Weather and Night Concreting

Replace the subsection heading and the entire text with the following:

415.5.13 Cold Weather Concreting

415.5.13.1 General

- (1) The contractor is responsible for the quality of the concrete placed in cold weather. The contractor shall take all precautions necessary to prevent freezing of the concrete until it has developed sufficient strength to open it to service. The contractor shall remove and replace frozen or frost damaged concrete at no expense to the department.
- (2) Unless the engineer issues written permission to continue, the contractor shall suspend concreting operations when a descending air temperature in the shade and away from artificial heat falls below 35 F (2 C). The contractor shall not resume concreting operations until an ascending air temperature in the shade and away from artificial heat reaches 30 F (-1 C). The engineer may require the contractor to measure the concrete temperature, at the point of placement, when the ambient air temperature falls below 40 F (5 C). The contractor shall maintain the temperature of the concrete at or above 50 F (10 C) at the point of placement.

- (3) If necessary to maintain placement temperature, the contractor may heat the water, aggregates, or both. The contractor shall uniformly heat, with steam or by other means, aggregates that are frozen or contain frost. The contractor shall accurately control the temperature of the mixing water if it is heated. The temperature of either the mixing water or the aggregates shall not exceed 100 F (38 C) when placed together with the cement in the mixer. The contractor shall control the temperature of the water and the aggregates so that the temperature of the concrete discharged from the mixer is between 50 F (10 C) and 80 F (27 C) inclusive.
- (4) The contractor shall not: heat the cement, add salt or chemical admixtures to the concrete mix to prevent freezing, or place concrete on a frozen base or subgrade.

415.5.13.2 Protective Covering

- (1) The contractor shall arrange to have available a sufficient quantity of material to provide thermal protection for concrete that has yet to meet the opening criteria specified in 415.5.15. The contractor may provide clear, black, or white polyethylene sheeting meeting the requirements, except for color and reflectance, specified in 415.2.5.4. The engineer may allow other curing materials with suitable water resistance, strength, and insulating properties.
- (2) When the official Weather Bureau forecast for the construction area predicts temperatures of less than 17 F (-8 C) within the next 24 hours, the contractor shall arrange to have available a sufficient quantity of straw or hay to protect all concrete that has yet to meet the opening criteria specified in 415.5.15. When approved by the engineer, the contractor may use other materials placed to the thickness necessary to provide the same insulating protection as the required thickness of loose, dry straw or hay.
- (3) At any time of the year, when the official Weather Bureau forecast for the construction area predicts freezing temperatures within the next 24 hours or when freezing temperatures actually occur, the contractor shall provide the minimum level of thermal protection specified below for concrete that has yet to meet the opening criteria specified in 415.5.15.

PREDICTED OR ACTUAL AIR TEMPERATURE	MINIMUM EQUIVALENT LEVEL OF PROTECTION
22 to <28 F (-6 to <-2 C)	single layer of polyethylene
17 to <22 F (-8 to <-6 C)	double layer of polyethylene
<17 F (<-8 C)	6" of loose, dry straw or hay between 2 layers of polyethylene

- (4) The contractor shall place protective material as soon as the concrete has been finished and has set sufficiently to prevent excessive marring of the surface. The contractor shall maintain the protective material in place until the concrete meets the opening criteria specified in 415.5.15. Where removal of the coverings is necessary to saw joints or perform other required work, and if approved by the engineer, the contractor may remove the covering for the minimum time required to complete that work.

415.5.15 Opening to Traffic

Replace the subsection heading and the entire text with the following:

415.5.15 Opening to Service

415.5.15.1 General

- (1) The contractor shall maintain moisture, temperature, and physical protection for concrete until it has developed sufficient strength to open it to service. The engineer will use the same criteria to allow the opening of non-pavement concrete items to service as is used to allow the opening of pavement items to traffic.

- (2) The engineer will allow the contractor to open pavement to construction and public traffic when the concrete attains a verified compressive strength of 3000 pounds per square inch (20.7 MPa). In the absence of compressive strength information, the engineer may allow the contractor to open pavement upon the expiration of the following minimum time periods as adjusted for changes in the ambient air temperature on the project.

APPLICATION	EQUIVALENT CURING DAYS
High early strength concrete	3
General purpose concrete (Grades A, A2, and A3)	4
General purpose concrete (Grades A-FA and A-IP)	5
General purpose concrete (Grades A-S, A-S2, and A-IS)	7

- (3) The equivalent curing day is based on a daily average ambient temperature of 60 F (16 C). The daily average ambient temperature is calculated as the average of the high and low temperatures on the project site, as recorded by the project engineer, for each day. When this daily average ambient temperature falls below 60 F (16 C), equivalent curing days are accumulated at a reduced rate. For a daily average ambient temperature of:
1. 60 F (16 C) or more; accumulate 1 equivalent curing day per calendar day.
 2. 40 to less than 60 F (4 to <16 C); accumulate 0.6 equivalent curing day per calendar day.
 3. Less than 40 F (<4 C); accumulate 0.3 equivalent curing day per calendar day.
- (4) The contractor may operate concrete saws and profilographs on concrete not meeting these opening criteria. When approved by the engineer, the contractor may operate other necessary light equipment on concrete not meeting these opening criteria. The engineer may suspend or delay operations that injure the surface or otherwise damage the concrete. The contractor shall clean the surface before traffic of any kind is permitted to use the pavement.

415.5.15.2 Opening Strength

415.5.15.2.1 General

- (1) The contractor shall determine opening strength and provide the engineer with the information required to verify that strength by one or a combination of the following methods:
1. Compressive strength testing of cylinders.
 2. Maturity method.
 3. Compressive strength testing of cores.
- (2) The resulting opening strength, when verified by the engineer, will apply to concrete on the same project meeting the following criteria:
1. Of the same mix design as the test location.
 2. Cured under similar or more desirable conditions.
 3. Placed on or before the test location.
- (3) When neither direct compressive strength test results nor maturity data are available, the engineer may estimate compressive strength based on test results of concrete of the same mix design placed contiguously under similar conditions on the same project.

415.5.15.2.2 Compressive Strength Testing of Cylinders

- (1) The contractor shall submit the compressive strength test results to the engineer for verification. The contractor shall compute the opening strength as the average of compressive strength test results for 2 cylinders. When the strength of a cylinder is less than 90 percent of the required strength, the engineer will reject the resulting average. The contractor shall field cure cylinders under conditions similar to those prevailing for the pavement they represent. The contractor shall fabricate cylinders according to AASHTO T 23 and test the cylinders according to AASHTO T 22. The department will consider costs associated with the fabrication and testing of concrete cylinders for the determination of opening strength as incidental to the related concrete bid item.

415.5.15.2.3 Compressive Strength Testing of Cores

- (1) The contractor shall submit the core test results to the engineer for verification. The contractor shall determine the opening strength from the compressive strength of cores obtained and tested according to AASHTO T 24. The department will consider costs associated with obtaining and testing cores for the determination of opening strength as incidental to the related concrete bid item.

415.5.15.2.4 Maturity Method

- (1) The contractor shall submit the maturity test results to the engineer for verification. The contractor shall determine the opening strength from the maturity of the in-place concrete, according to ASTM C1074, using the temperature-time factor method with a 32 F (0 C) datum temperature. The contractor shall provide the engineer with a strength/maturity calibration curve based on either laboratory developed strength results or on strength results from test slabs incorporated in the project. The contractor shall develop a new strength/maturity calibration curve whenever the mix design is changed. The department will consider costs associated with maturity evaluation for the determination of opening strength as incidental to the related concrete bid item.

415.5.16 Tolerance in Pavement Thickness

Replace the entire text with the following:

415.5.16.1 General

- (1) The pavement shall be constructed to the thickness shown on the plans. Determination of the pavement thickness will be based on an acceptance program that considers the results of the following:
 1. Contractor Quality Control Tests.
 2. Validation of Contractor Quality Control Test Procedures.
 3. Verification Tests.
 4. Dispute Resolution Process.
- (2) Contractor probing of the freshly placed concrete will be the primary method for determination of thickness. Acceptance and payment will be based on the contractor's quality control tests until it can be shown through the validation, verification, or dispute resolution process that the contractor's test results are in error. The required contractor quality control test measurements shall be recorded and will become part of the permanent project record.
- (3) Areas with deficient thickness, as defined below, will be determined by coring and accepted and paid for as specified in 415.7.1.2.

415.5.16.2 Definitions

- (1) These definitions are used to describe thickness within 415.5.16.

Acceptable Greater than or equal to the plan thickness minus 3/8 inch (10 mm).

Marginal Greater than or equal to the plan thickness minus 1 inch (25 mm) but less than the plan thickness minus 3/8 inch (10 mm).

Deficient Less than the plan thickness minus 1 inch (25 mm).

Measured Thickness The thickness determined as the average of the contractor quality control measurements taken for a pavement unit.

Final Thickness The thickness determined after validation, verification, and resolution of disputes for an area of pavement.

415.5.16.3 Pavement Units

- (1) Generally, the pavement shall be divided into basic units 250 feet (80 m) long, measured along the pavement centerline. Fractional units less than 250 feet (80 m) but greater than or equal to 100 feet (30 m) long shall be considered a whole basic unit. Fractional units less than 100 feet (30 m) long shall be included as a part of a contiguous basic unit.
- (2) The width of a basic unit shall be one lane, as measured from the pavement edge to the adjacent longitudinal joint; from one longitudinal joint to the next; or between pavement edges where there is no longitudinal joint.
- (3) Special units shall be established for areas of fillets, intersections, gaps, ramps and other special areas not included in basic units.

415.5.16.4 Contractor Quality Control Tests

415.5.16.4.1 General

- (1) The measured thickness of a pavement unit shall be determined as:
1. For a basic unit containing no deficient areas, the average of the 2 required contractor probings made within that unit.
 2. For a special unit containing no deficient areas, the average of the available measurements made within that unit as agreed upon by the engineer.
 3. For units containing deficient areas, the average thickness of the remaining portion of that unit that has not been defined as deficient. This determination shall be based on adjacent required tests and, if agreed upon by the engineer, may include additional measurements provided by the contractor.
- (2) In computing the measured thickness for a unit, individual measurements in excess of the plan thickness by more than 1/4 inch (6 mm) shall be considered as the plan thickness plus 1/4 inch (6 mm).

415.5.16.4.2 Probing Method

- (1) The contractor shall make a series of 2 probings for each basic unit. Both probings shall be at a single longitudinal location selected at random. Individual probings shall be at transverse locations as agreed upon by the engineer. The probing locations may be changed as the engineer approves or directs.
- (2) All probing tests shall be conducted as prescribed in subsection 13.20.9 of the department's construction and materials manual.

415.5.16.4.3 Alternate Methods

- (1) An alternate method, agreeable to the engineer, may be employed to determine the measured thickness of special units. The contractor shall measure the depth of a special unit at a minimum of 2 locations as agreed upon by the engineer. Contractor measurements and a brief description of the method employed shall be recorded and will become part of the permanent project record.

415.5.16.5 Validation of Contractor Quality Control Test Procedures

- (1) The engineer will periodically observe the contractor's testing procedure to assure that the test is being performed properly. At the engineer's request, the probing assembly shall be brought to the edge of the pavement for the engineer to validate the accuracy of the measurements recorded by the contractor.

415.5.16.6 Verification Tests

- (1) The engineer will use probing to verify that the pavement thickness is acceptable. Verification tests will be performed at a frequency of at least once for each half-day of paving. The engineer may elect to increase the verification testing frequency as necessary to assure that the pavement has an acceptable thickness.
- (2) The engineer will select a longitudinal location at random and designate the transverse positions for a series of 2 probings in each lane of pavement at that location. The contractor shall perform the probing as prescribed in subsection 13.20.9 of the department's construction and materials manual. The engineer will be present and observe both placement of the plates and probing of the freshly placed concrete.
- (3) The engineer will record the individual measurements and calculate the average thickness for each lane. In computing the average thickness for verification tests, measurements in excess of the plan thickness by more than 1/4 inch (6 mm) will be considered as the plan thickness plus 1/4 inch (6 mm). The engineer will make available the results of the verification tests to the contractor without delay.
- (4) When verification tests indicate acceptable thickness, the final thickness will be accepted as equal to the contractor's measured thickness for the affected pavement and no further action is required.
- (5) When verification tests indicate marginal or deficient thickness and the contractor's tests do not, the contractor and engineer will jointly investigate that discrepancy immediately. If this investigation does not lead to a mutually agreeable explanation of the discrepancy, either the contractor or the engineer may invoke the dispute resolution provisions as specified in 415.5.16.7 to determine the final thickness of the affected pavement.
- (6) Where the contractor and engineer agree that the pavement is deficient, the extent of the deficient area will be determined as specified in 415.5.16.10.

415.5.16.7 Dispute Resolution

- (1) Resolution of a disputed thickness will be based on coring. Dispute resolution coring will be performed by the engineer according to AASHTO T 24 and evaluated by the engineer according to AASHTO T 148. Costs associated with dispute resolution coring, except costs for filling of the holes with concrete or mortar, will be shared equally by the contractor and the department.

415.5.16.8 Acceptable Areas

- (1) When the final thickness of a pavement unit is acceptable, no more measurements are required and that unit will be paid for at the full contract price.

415.5.16.9 Marginal Areas

- (1) When the final thickness of a pavement unit is marginal, the pay adjustment for that unit will be contingent upon the final thickness of the next unit in that lane. If the location for the next required random probing series is within 125 feet (40 m) of the first test location, the contractor may select and document a new random location to provide space for corrective action.
- (2) If the final thickness of the next unit is acceptable, then no pay adjustments will be assessed for either unit. If the final thickness of the next unit is not acceptable, pay will be adjusted for both units. Pay adjustment will continue for each succeeding unit until a unit with acceptable final thickness is produced.

415.5.16.10 Deficient Areas

- (1) Pavement will be considered deficient if one or more of the following is true:
 1. An individual required contractor probe measurement is deficient.
 2. The outcome of an investigation of a discrepancy between contractor and verification test results indicates a deficient final thickness.
 3. A dispute resolution core is deficient.
- (2) The engineer will take additional measurements by coring of the hardened concrete to determine the extent of this deficient area. Cores will be taken at points approximately 20 feet (6 m) in each direction of the deficient measurement on a line generally parallel to the centerline or longitudinal axis of the unit. Coring will continue until a core that is not deficient is located in each direction. The limits of the deficient area will be determined, at each end, by lines drawn across the unit of pavement midway between the location of the last 2 cores.
- (3) Core testing will be performed by the engineer according to AASHTO T 24 and evaluated by the engineer according to AASHTO T 148. Coring, including filling of the holes with concrete or mortar, shall be paid for by the contractor.

415.7.1 Concrete Pavement

Replace the entire text with the following:

415.7.1.1 General

- (1) Except as otherwise specified in 415.7.1.2 for pavement thinner than plan thickness minus 3/8 inch (10 mm), the department will pay for Concrete Pavement, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling, preparing, placing, curing and protecting of all materials, including cement, concrete masonry, joints and joint materials, dowels and tie bars, unless otherwise provided; for preparing foundation, unless otherwise provided; for thickness measurement, except as specified in 415.5.16.7; for filling all core holes; for furnishing, operating, maintaining and repairing a profilograph, performing profilograph testing of the pavement surface, providing all special traffic control required for profilograph testing, and performing all necessary corrective actions and corrective work associated with profilograph testing, all if required by special provision in the contract; and for all labor, equipment, tools and incidentals necessary for constructing the pavement complete, exclusive of reinforcement.

415.7.1.2 Pay Adjustment for Final Thickness

- (1) Payment, for pavement units subject to pay adjustment as specified in 415.5.16, will be:

FOR PAVEMENT WITH A FINAL THICKNESS THINNER THAN PLAN THICKNESS BY:	PERCENT OF THE CONTRACT UNIT PRICE
more than 3/8 inch (10 mm) but less than or equal to 1/2 inch (15 mm)	80
more than 1/2 inch (15 mm) but less than or equal to 3/4 inch (20 mm)	60
more than 3/4 inch (20 mm) but less than or equal to 1 inch (25 mm)	50

- (2) Areas of pavement determined to have deficient final thickness, as specified in 415.5.16.10, shall be either:

1. Removed and replaced by the contractor with concrete pavement of acceptable thickness and paid for at the full contract price.
 2. Left in place, if permitted by the engineer, and not paid for.
-

416.1 Description

Replace paragraph four with the following:

- (4) Pavement Terminal Units consists of the construction of pavement terminal units, at the locations and in accordance with the design and details shown on the plans. A pavement terminal unit consists of a reinforced concrete sleeper slab and a structural steel wide flange beam. The work shall conform to the curing requirements for Concrete Pavements specified in 415.5.10.

Replace paragraphs eleven and twelve with the following:

- (11) Concrete Surface Drains consists of the construction of concrete surface drains of the design shown on the plans or as modified by the engineer, at the required locations. The work shall conform to the curing requirements for Concrete Pavements specified in 415.5.10.
 - (12) Concrete Headers consists of construction of a header block extending the full width of the pavement, at the locations and of the design shown on the plans. The work shall conform to the curing requirements for Concrete Pavements specified in 415.5.10.
-

416.2.1 Pavement Terminal Units

Replace paragraph one with the following:

- (1) Concrete masonry used in the work shall conform to the requirements for concrete masonry grade A, A-S, A-IS, A-FA, A-IP, C, C-S, C-IS, C-FA or C-IP as specified under section 501. Reinforcement steel shall conform to the requirements of section 505.
-

416.2.6 Concrete Pavement Gaps

Replace the entire text with the following:

- (1) The contractor shall construct gaps with concrete of the same proportions as specified for the contiguous pavement. If the contractor obtains permission, as specified in 416.3.9, to pave through the gap; the contractor shall provide concrete of the proportions specified for grade E in 501.5.2 and that meets all the other requirements for the contiguous pavement; use grade A or A2 air-entrained high early strength concrete; or substitute grade C air-entrained concrete.
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416.3.1 Concrete Pavement Approach Slab

Delete paragraph five.

416.3.7 Concrete Pavement Repair

Delete paragraphs five and six.

416.3.8.5 Curing

Delete the entire text and replace the subsection heading with the following:

416.3.8.5 (Vacant)

416.3.9 Concrete Pavement Gaps

Replace the entire text with the following:

- (1) The contractor shall form gaps by constructing a transverse construction joint as specified in 415.5.8 or, if approved by the engineer, by an alternate method. If approved by the engineer, the contractor may elect to pave continuously through the gap.
-

416.3.10 Continuous Diamond Grinding

Replace paragraph six with the following:

- (6) Solid and liquid residue from grinding shall be removed from the roadway by vacuuming. Residue and water shall not be permitted to flow or be blown across lanes used by public traffic; or to enter any storm sewer, stream, lake, reservoir or marsh. Residue and water shall be disposed of at an acceptable material disposal site, except that residue from pavements in rural areas may be disposed of on the roadway, beyond the shoulder edge, in a manner satisfactory to the engineer.
-

416.5 Basis of Payment

Replace paragraph nine with the following:

- (9) The department will pay for Concrete Pavement Gaps, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing all materials used to form the header; for forming the header; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. If the contractor obtains permission, as specified in 416.3.9, to pave through the gap; the department will pay the full contract price for each gap eliminated. Payment for furnishing and placing concrete material is included under Concrete Pavement.

PART V STRUCTURES

Add the following new subsection:

501.3.4.4 Non-Chloride Accelerating Admixtures

- (1) Non-chloride accelerating admixtures incorporated in concrete masonry shall conform to AASHTO M 194, type C or type E.

501.3.6.3.6 Size Requirements

Replace the entire text with the following:

- (1) Fine aggregate shall be well graded from coarse to fine and shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING BY MASS
3/8 in. (9.5 mm)	100
number 4 (4.75 mm)	90 - 100
number 8 (2.36 mm)	80 - 100
number 16 (1.18 mm)	50 - 85
number 30 (600 µm)	25 - 60
number 50 (300 µm)	10 - 30 ^[1]
number 100 (150 µm)	2 - 10 ^[1]

^[1] For fine aggregate used in concrete pavement, base course, or grade E concrete, minima passing the number 50 (300 µm) and number 100 (150 µm) sieves may be reduced to 5 and 0 percent, respectively.

501.3.6.4.4 Physical Properties

Replace the entire text with the following:

- (1) The department will conduct the wear test according to AASHTO T 96. The percent wear shall not exceed 50.
- (2) The department will conduct 5 cycles of the sodium sulfate soundness test, according to AASHTO T 104, on aggregate retained on the number 4 (4.75 mm) sieve. The weighted loss shall not exceed 12 percent.
- (3) The department will conduct freeze-thaw soundness tests, according to AASHTO T 103, on crushed stone aggregates produced from sources in limestone/dolomite formations in specified counties when those aggregates are used in concrete pavements or bridge decks. The department will test aggregate retained on the number 4 (4.75 mm) sieve using either Method A with 50 cycles, Method B with 16 cycles, or Method C with 25 cycles. The weighted average loss shall not exceed 18 percent.
- (4) The department will test material produced from sources in the following counties:

Brown	Fond du Lac	Iowa	Oconto	Walworth
Columbia	Grant	Jefferson	Outagamie	Winnebago
Dane	Green	Lafayette	Rock	
Dodge	Green Lake	Marinette	Shawano	
- (5) The department may waive the requirement for soundness testing by freezing and thawing for existing sources determined to be in either the Silurian system or the Prairie du Chien Group of the Ordovician system of rocks in Wisconsin.
- (6) The department may prohibit the use of crushed stone from limestone/dolomite deposits having thinly bedded strata or strata of a shaley nature. The department may also prohibit the use of aggregates from deposits or formations known to produce unsound material.

- (7) When all coarse aggregates used in the work are produced from the same deposit or source, the tests for wear, sodium sulfate soundness, and soundness by freezing and thawing will be made on a composite sample. The composite sample will contain equal percentages of each component coarse aggregate incorporated in the work. When the component coarse aggregates are produced from more than one deposit or source, the tests for wear, sodium sulfate soundness, and soundness by freezing and thawing will be made on one sample from each deposit or source.

501.3.6.4.5 Size Requirements

Replace paragraph four with the following:

- (4) The contractor shall provide coarse aggregate consisting entirely of size number 1 as follows:
1. When approved by the engineer, for concrete masonry grade A, A2, A3, A-FA, A-IP, A-S, A-S2, or A-IS.
 2. Except for concrete pavement repair and when grade C, C-FA, C-S, C-IS, or C-IP is substituted for grade A Air Entrained High Early Strength Concrete as specified in 501.4.1, for concrete masonry grade C, C-FA, C-S, C-IS, or C-IP.
 3. When approved by the engineer, for concrete masonry grade D.
 4. Except for concrete pavement repair, for concrete masonry grade E.
 5. For concrete masonry in prestressed concrete members.

501.3.6.5 Sampling and Testing

Replace paragraph one with the following:

- (1) Sampling and testing will be according to the following AASHTO methods, except as revised with the engineer's approval:

Sampling aggregates	T 2
Lightweight pieces in aggregate.....	T 113
Material finer than number 200 (75 µm) sieve	T 11
Unit mass of aggregate	T 19
Organic impurities in sands.....	T 21
Sieve analysis of aggregates	T 27
Effect of organic impurities in fine aggregate	T 71
Los Angeles abrasion of coarse aggregate.....	T 96
Freeze-thaw soundness of coarse aggregate	T 103
Sodium sulfate soundness of aggregates	T 104
Specific gravity and absorption of fine aggregate	T 84
Specific gravity and absorption of coarse aggregate	T 85
Sampling fresh concrete	T 141
Making and curing concrete compressive strength test specimens.....	T 23
Compressive strength of molded concrete cylinders	T 22

501.3.7 Fly Ash

Replace paragraph three with the following:

- (3) The contractor shall have the fly ash tested by a recognized laboratory as defined in 501.3.3, 30 days prior to the proposed use of the fly ash and every 30 days during the progress of the work. The manufacturer shall have daily uniformity tests conducted on the fly ash. These daily uniformity tests consist of a determination of the specific gravity, percent retained on the 45 mm sieve, loss on ignition, moisture content, sulfur trioxide content, and air content of the mortar. The department may reduce the required frequency of the uniformity testing for specific tests on specific fly ash sources when statistical analysis of current data shows no significant probability of exceeding uniformity or specification limits.

501.3.8 Slag

Replace the entire text with the following:

- (1) For grade A-S, A-S2, B-S, and C-S concrete, the contractor shall provide ground granulated blast furnace slag conforming to ASTM C 989, grade 100 or 120.

501.4.3 Grades of Concrete

Replace the entire text with the following:

501.4.3.1 General

- (1) Unless otherwise specified in the contract, and except as specified for pre-stressed concrete members in 503 and for Special High Early Strength Concrete Pavement Repair in 416.2.5, the contractor shall provide the grade of concrete as specified in 501.4.3.2 or 501.4.3.3. When the contractor selects and uses a specific grade of concrete for an item of work, the contractor shall use that grade throughout the entire construction of the item, except as specified in 501.4.3.3 or as approved by the engineer.

501.4.3.2 Special Restrictions

- (1) When the geologic composition of the coarse aggregate is primarily igneous or metamorphic materials, the contractor shall provide concrete for concrete pavement, approach slabs, barrier walls, surface drains, driveways, alleys, sidewalks, and curb and gutter as follows:

Grade A, A-FA, and A-S : When type II portland cement is used.

Grade A-S2 : When these items are placed by a slip-formed process and type II portland cement is used.

Grade C, C-FA, C-S, C-IS, and C-IP : When Types I or III portland cement are used.

501.4.3.3 General Use

- (1) For all concrete not included under 501.4.3.2, the contractor shall use the grade of concrete for different items of work as follows:

Grade A, A-FA, A-S, A-IS, and A-IP : Except as specified for other grades; for Concrete Pavement, Concrete Masonry in structures, and incidental construction.

Grade A-FA, A-S, A-IS, A-IP and D : Concrete Masonry for structures when used in decks, curbs, railings, parapets, medians and sidewalks.

Grade A2 and A-S2, : For Concrete Pavement, Curb, Gutter, Curb and Gutter, Barrier Wall, or Sidewalk when these items are placed by a slip-formed process.

Grade A3 : For Concrete Pavement and incidental construction on low volume State Trunk Highways and other roads under municipal or local jurisdiction in areas where a proven performance record exists for similar mixes. Use only in locations and applications specifically delineated in the contract.

Grade B, B-FA, B-S, B-IS, and B-IP : For Concrete Base Course.

Grade C, C-FA, C-S, C-IS, and C-IP : For concrete pavement repair and other uses when required in the contract.

Grade D : For Concrete Masonry, Seal modified as specified in 502.3.6.3.

Grade E : For Concrete Masonry overlays and repairs on decks of structures and approaches.

501.5.2 Proportions for Concrete

Replace the "Proposed Master Limits of Job Mix" table with the following:

QUANTITIES FOR A NOMINAL CUBIC YARD^[1]

CONCRETE GRADE ^{[2][3][6]}	CEMENT ^{[4][5]} (lb)	CLASS C FLY ASH (lb)	SLAG ^[7] (lb)	WEIGHT TOTAL AGG (lb)	PERCENT FINE AGG ^[8] (% total agg)	DESIGN WATER (gals)	MAXIMUM WATER (gals)
A	565	-	-	3120	30-40	27	32
A2	530	-	-	3190	"	25	30
A3	517	-	-	3210	"	25	30
A-FA ^{[9][10]}	395	170	-	3080	"	27	32
A-S ^{[9][10]}	395	-	170	3100	"	27	32
A-S2 ^[10]	285	-	285	3090	"	27	32
A-IP ^[9]	565	-	-	3100	"	27	32
A-IS ^[9]	565	-	-	3090	"	27	32
B	400	-	-	3300	"	25	31
B-FA ^[10]	280	120	-	3270	"	25	31
B-S ^[10]	280	-	120	3280	"	25	31
B-IP	400	-	-	3280	"	25	31
B-IS	400	-	-	3280	"	25	31
C	660	-	-	2980	"	30	36
C-FA	560	100	-	2960	"	30	36
C-S	560	-	100	2970	"	30	36
C-IP	660	-	-	2970	"	30	36
C-IS	660	-	-	2950	"	30	36
D	610	-	-	3040	"	29	34
E	823	-	-	2810	50	32	35

QUANTITIES FOR A NOMINAL CUBIC METER^[1]

CONCRETE GRADE ^{[2][3][6]}	CEMENT ^{[4][5]} (kg)	CLASS C FLY ASH (kg)	SLAG ^[7] (kg)	WEIGHT TOTAL AGG (kg)	PERCENT FINE AGG ^[8] (% total agg)	DESIGN WATER (liters)	MAXIMUM WATER (liters)
A	335	-	-	1854	30-40	134	157
A2	315	-	-	1892	"	126	148
A3	307	-	-	1907	"	123	147
A-FA ^{[9][10]}	235	100	-	1828	"	134	157
A-S ^{[9][10]}	235	-	100	1843	"	134	157
A-S2 ^[10]	169	-	169	1836	"	134	157
A-IP ^[9]	335	-	-	1840	"	134	157
A-IS ^[9]	335	-	-	1836	"	134	157
B	237	-	-	1959	"	126	154
B-FA ^[10]	166	71	-	1940	"	126	154
B-S ^[10]	166	-	71	1947	"	126	154
B-IP	237	-	-	1947	"	126	154
B-IS	237	-	-	1948	"	126	154
C	392	-	-	1766	"	149	176
C-FA	332	60	-	1757	"	149	176
C-S	332	-	60	1763	"	149	176
C-IP	392	-	-	1763	"	149	176
C-IS	392	-	-	1752	"	149	176
D	362	-	-	1803	"	145	170
E	488	-	-	1667	50	156	171

^[1] A "nominal" cubic yard or a "nominal" cubic meter, by definition, has the specified weight of cement and total aggregate, the "design" mix water, and 6.0 percent air.

^[2] For all grades, the contractor shall use a water reducing admixture meeting the requirements of 501.3.4.3 and 501.5.4.4.

^[3] For all grades, the contractor shall provide air entrainment as specified in 501.5.4.2.

^[4] The contractor shall only use type IP cement in grade A-IP, B-IP, and C-IP.

^[5] The contractor shall only use type IS cement in grades A-IS, B-IS, and C-IS.

^[6] The contractor shall use a water reducing admixture, as specified in 501.5.4.4, for grade D. The contractor shall not use type A (M 194) water reducing admixture when a set retarding admixture is used as required in 501.5.4.3.2.

^[7] The contractor shall only use grade 120 slag for grade C-S concrete.

^[8] For mixes using crushed stone or recycled concrete coarse aggregate, the engineer may allow up to 45 percent fine aggregate to improve workability.

^[9] For bridge substructures, the contractor may use a non-chloride accelerating admixture meeting the requirements of 501.3.4.4.

^[10] The fly ash and slag quantities shown in table are the maximums allowable. Calculate required cement and fly ash or slag contents for these mixes if table values are not used as follows: Start with the base cement content for the grade A or B mix and add 1.0 pounds (1.0 kg) or more fly ash or slag for each 1.0 pound (1.0 kg) of cement removed. Minimum fly ash or slag replacement shall be 15% of base cement content.

501.5.5 Fly ash

Delete the entire text and replace the subsection heading with the following:

501.5.5 (Vacant)

501.5.6 Slag

Delete the entire text and replace the subsection heading with the following:

501.5.6 (Vacant)

501.7.4 Admixtures

Replace the entire text with the following:

501.7.4.1 General

- (1) Admixtures may be proportioned by volume or by mass. The contractor shall follow an approved procedure for adding the specified amount of each admixture. Admixtures shall be added during initial batching of the concrete except as specified in 501.7.4.2.
- (2) When more than one admixture is used, each admixture shall be added in a manner which precludes intermixing of the admixtures prior to incorporation in the mixture. The admixture may be introduced into the water line, directly into the mixer during the introduction of the water or be uniformly dispensed into the fine aggregate just prior to incorporation in the mix.

501.7.4.2 Field Addition of Air-Entraining Admixtures

- (1) Retempering with air-entraining admixtures will be permitted at the site of the work for concrete delivered in truck mixers.
 - (2) When addition of air entraining admixture is needed at the site of the work to raise the air content of the concrete above the lower specification limit, it shall be measured in a calibrated container and then added to the mixer in a dilute solution with water. The concrete shall then be mixed at mixing speed for at least 30 revolutions prior to discharge.
-

501.8.2 Delivery

Replace paragraph three with the following:

- (3) For Ready-Mixed Concrete delivered in agitating vehicles, the contractor shall deliver and completely discharge the concrete within the following limits, beginning when water is added to the cement or when cement is added to the aggregates.
 1. 1 hour for air temperature 60 F (16 C) or higher at placement when the contractor does not use an approved retarder.
 2. 1.5 hour for air temperature less than 60 F (16 C) at placement.
 3. 1.5 hour for air temperature 60 F (16 C) or higher at placement and the contractor uses an approved retarder.
-

501.8.3 Mixers and Mixing

Replace paragraphs eleven through seventeen with the following:

- (11) When concrete is mixed in a truck mixer, the contractor shall mix each batch for 70 or more revolutions at the manufacturer designated mixing speed. No batch shall have more than 300 total revolutions, the sum of the revolutions at mixing and agitating speeds. All materials, including mixing water, shall be in the mixer before revolutions are started.

- (12) The mixing water shall be added at the batching plant, but if additional mixing water is required to obtain the specified slump, water may be added with the permission of the engineer. The total of all free and added water shall not be in excess of that permitted elsewhere in these specifications. If additional water is added at the site of the work, a minimum of 20 revolutions of the truck mixer at mixing speed will be required before discharge of any concrete. The additional water shall be added and the additional mixing done at the site of the work within 45 minutes after the introduction of the mixing water to the cement or the cement to the aggregates. The time limit for adding water and additional mixing may be extended, by the engineer, to 75 minutes for those grades of concrete mixed under the conditions described in 501.8.2 for which the delivery time limit is 1-1/2 hours. When additional revolutions at mixing speed are required because of water added at the site the sum of the revolutions at mixing and agitating speeds shall not exceed 300.
 - (13) When a truck mixer or agitator is used to transport concrete completely mixed in a stationary mixer, the drum or agitator shall rotate during transportation and until discharge at the agitating speed.
 - (14) Truck mixers shall be equipped with an approved revolution counter. Unless equipped to control and count revolutions at mixing speed, mixing shall be done at the batching plant or job site with the mixer operated at agitating speed while in transit.
 - (15) For truck mixers operating from plants erected for the sole purpose of supplying concrete to highway projects, and when the delivery time is short enough so that the maximum number of revolutions at mixing speed cannot be exceeded in transit, the mixer may be operated at mixing speed in transit.
 - (16) When a stationary mixer is used for partial mixing of the concrete, the mixing time in the stationary mixer may be reduced to the minimum required to intermingle the ingredients, about 30 seconds.
 - (17) When a truck mixer is used to finish the partial mixing done in a stationary mixer, the contractor shall mix each batch for 50 or more revolutions at the manufacturer designated mixing speed. No batch shall have more than 300 total revolutions, the sum of the revolutions at mixing and agitating speeds.
-

501.10.1 Slump

Replace paragraph one with the following:

- (1) Concrete for structures or placed in forms, except for grade E and as specified in 502.3.6.3 for underwater placement, shall have 2 inch (50 mm) to 4 inch (100 mm) slump when hand-consolidated and one-inch (25 mm) to 4 inch (100 mm) slump when vibrated. The engineer may increase the slump up to 5 inches (125 mm) for difficult, hand-consolidated placements.
-

501.11 Placing

Replace the entire text with the following:

- (1) Except as allowed in 501.8.2 for Ready-Mixed Concrete, the contractor shall place concrete within 30 minutes after the water is first added to the batch. The contractor shall use placement techniques that minimize segregation. The contractor shall batch, mix, place, and finish concrete for a monolithic unit as continuously as possible.
- (2) For concrete used in structures, except when used in seals, the contractor shall maintain the temperature of the fresh concrete at or below 80 F (27 C) during placement.

501.12.3.1 General

Replace the entire text with the following:

- (1) Unless the engineer directs otherwise, the contractor shall protect all concrete masonry mixed or placed under one or more of the following conditions:
 1. Mixing or placement occurs from December 1 through March 31 inclusive.
 2. The air temperature is 40 F (5 C) or less.
 3. The air temperature is predicted to be 40 F (5 C) or less within 6 days following placement.
 - (2) The contractor shall protect all concrete for structural masonry from freezing until it has reached a compressive strength of 3500 pounds per square inch (24 MPa). The contractor shall determine compressive strength by one or both of the following methods:
 1. Compressive strength testing of field cured cylinders.
 2. Maturity of the in place concrete, according to ASTM C1074, using the temperature-time factor method with a 32F (0 C) datum temperature.
-

501.12.3.2 Mixing

Replace paragraph one with the following:

- (1) The contractor shall heat the mixing water, aggregates, or both under one or both of the following conditions:
 1. The air temperature is 40 F (5 C) or less at the time of mixing or placement.
 2. The air temperature is predicted to be 40 F (5 C) or less within 24 hours following placement.
-

502.2.3 Liquid Membrane-Forming Compounds

Replace the entire text with the following:

- (1) For curing concrete in structures, the contractor shall provide liquid curing compound conforming to AASHTO M 148, type 1-D, Clear or Translucent with Fugitive Dye, except as modified for testing in 415.2.5.1.
-

502.3.2 Composition of Concrete

Replace paragraph four with the following:

- (4) The contractor shall provide the grade of concrete specified in 501.4.3.3.
-

502.3.5.2 Falsework

Replace paragraph four and the "Grade of Concrete" table with the following:

- (4) When field operations are not controlled by cylinder tests, the contractor shall maintain in-place, falsework supporting concrete masonry in bridges, including slabs, beams, girders, arches, or concrete slabs on steel or concrete girders. The contractor may remove that falsework after the following minimum times:

SPAN LENGTH in feet (m)	GRADES A, A-FA, A-S, A-IP, A-IS, or D in days ^[1]	GRADES A-H.E.S, C, C-FA, C-S, C-IP, or C-IS in days ^[1]
12 (3.66) or less	7	3
Over 12 (3.66)	14	6

^[1] Only count days where the concrete surface temperature did not fall below 40 F (4 C).

502.3.6.1 General

Replace paragraph ten with the following:

- (10) Where concrete is conveyed or placed by pumping, the equipment shall be suitable in kind and adequate in capacity for the work. The equipment shall be so arranged that no vibrations result which might damage freshly placed concrete. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. When pumping is completed, the concrete remaining in the pipeline, if it is to be used, shall be ejected in such a manner that there will be no contamination of the concrete or separation of the ingredients. After this operation, the entire equipment shall be thoroughly cleaned.

Add the following between paragraphs ten and eleven as paragraph ten-a:

- (10a) When concrete is placed by pumping, the contractor shall take action to minimize entrained air loss. The point of discharge from the flexible hose at the end of the boom shall be higher than the lowest point of the flexible hose. When the boom is extended, this may be accomplished by laying part of the flexible hose on the deck. When the flexible hose is completely suspended from the boom, this shall be accomplished by tying the discharge end of the flexible hose back toward the end of the rigid boom to form a partial loop. Alternate methods may be approved by the engineer if the contractor can demonstrate that the air loss in the concrete imparted by the pumping process does not exceed 1.0 percent in any boom orientation.

502.3.6.3 Depositing Concrete Underwater

Replace paragraph two with the following:

- (2) The contractor shall provide grade D concrete as specified for concrete masonry in section 501 except that the slump shall be 5 to 9 inches (125 to 225 mm). For concrete used in seals, the contractor may use up to 40 gallons per cubic yard (200 L/m³) of mixing water.

502.3.9 Curing

Replace paragraphs fourteen through sixteen with the following:

- (14) (Vacant)
- (15) Concrete Masonry in the inside faces of railings and parapets shall be cured by covering with wetted burlap immediately after the forms are removed and the required surface finish is applied and keeping such covering thoroughly wet for a period of at least four days; or by covering for a like period with thoroughly wetted polyethylene-coated burlap meeting the requirements of 415.2.5.5. Coverings shall be satisfactorily secured along all edges to prevent loss of moisture.
- (16) Concrete Masonry in the outside faces of railings, parapets, exterior girders and similar parts of the structure shall be cured by applying membrane curing material immediately after the forms are removed and the required surface finish is applied; or by covering with wetted burlap immediately after the forms are removed and the required surface finish is applied and keeping such covering thoroughly wet for a period of at least four days; or by covering for a like period with thoroughly wetted polyethylene-coated burlap meeting the requirements of 415.2.5.5. Coverings shall be satisfactorily secured along all edges to prevent loss of moisture.

502.3.11.2 Superstructures

Replace the entire text with the following:

- (1) When approved by the engineer, the contractor may store small articles or operate necessary light equipment on concrete decks that have cured sufficiently to prevent damage to the concrete. When the in-place strength is determined by testing cylinders, the contractor may operate loaded trucks or heavy equipment on the superstructure after the affected concrete attains a compressive strength of 3500 pounds per square inch (24.2 MPa). In the absence of cylinder test information, the contractor shall not operate loaded trucks or heavy equipment on the superstructure until the affected concrete has cured, under favorable conditions, for at least 21 days. When grade A-FA, A-S, A-IS, or A-IP concrete is used, that period will be extended to 28 days.
- (2) The contractor shall determine the attained strength of the concrete as the average of compressive strength test results for 2 cylinders. When the strength of a cylinder is less than 90 percent of the required strength, the engineer will reject the resulting average. The contractor shall field cure cylinders under conditions similar to the most unfavorable conditions prevailing in the portion of the structure they represent.
- (3) On structures where the deck concrete conforms to the requirements 502.3.11.2(1) and 502.3.11.2(2); the contractor may operate hauling equipment, as necessary to perform subsequent pours, on the structure after curbs or parapets have been in place for 24 hours. For the first 24 hours the contractor shall limit loadings applied directly over the exterior girders to those imposed during concrete unloading operations.

502.3.12 Name Plates

Replace paragraph three with the following:

- (3) Each plate shall be rigidly attached to concrete structures by means of 2 lugs at least 75 mm long cast integral with the plate. The plate lugs shall be imbedded or epoxied in the concrete with the outer face of the border flush with the face of the concrete.

502.5.1 Description

Replace paragraphs two and three with the following:

- (2) Concrete Masonry Anchors, Type L consists of drilling holes and furnishing and placing epoxy resin cartridges, and placing reinforcing bar anchors of the length and bar size shown on the plan.
- (3) Concrete Masonry Anchors, Type S consists of drilling holes and providing either mechanical wedge or epoxy resin anchors of the type and size the plan shows.

502.5.2.2 Anchors, Type S

Replace the entire text, including all three enclosed subsections, with the following:

- (1) The contractor shall provide anchors that develop the pullout strength the plans show. When the plans show using reinforcing bars in type S anchors, those bars shall conform to 505.2.3 for High Strength Bar Steel Reinforcement and be epoxy anchored.
- (2) As the plans show, the contractor shall provide anchors, bolts, studs, nuts, and washers either hot dipped or mechanically zinc coated according to AASHTO M 232 or AASHTO M 298, respectively, or made of stainless steel.
- (3) For epoxied anchors, the contractor shall provide a 2-part epoxy resin mixed according to the manufacturer's recommendations.

502.7.6 Protective Surface Treatment

Replace the entire text with the following:

- (1) The department will measure Protective Surface Treatment in square yards (m²). The quantity measured for payment shall be the actual area of bridge deck and appurtenances treated in accordance with the contract.

502.8.6 Protective Surface Treatment

Replace the entire text with the following:

- (1) The department will pay for Protective Surface Treatment, measured as provided above, at the contract unit price. That price is full compensation furnishing and applying all materials, for preparing and cleaning all surfaces, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work in accordance with the contract.

502.8.7.2 Anchors, Type S

Add the following to the end as paragraph two:

- (2) When the plans show using reinforcing bars in type S anchors, the department will pay for those bars separately under the appropriate High Strength Bar Steel Reinforcement or Coated High Strength Bar Steel Reinforcement item described in section 505.

503.3.2.2.1 Steam Curing

Replace paragraph three with the following:

- (3) The temperature within the enclosure during the curing period shall be maintained between 50 F (10 C) and 160 F (71 C). The temperature adjacent to the concrete in different locations within the housing shall not vary more than 20 F (12 C) at any one time.

503.3.2.4 Surface Finish

Replace paragraph one with the following:

- (1) Exposed surfaces of prestressed concrete members shall have a sack-rubbed surface finish as specified in 502.3.8.5 before shipment from the plant. Surfaces to be bonded shall have a wire brush or stiff broom finish. After the sack-rubbed finish has adequately cured, approved concrete sealer for non-trafficked surfaces shall be uniformly applied to all sack-rubbed surfaces using the manufacturer's recommended rate and procedures.

Add the following new subsection:

505.2.5 Welded Steel Wire Fabric for Concrete Reinforcement

- (1) Welded steel wire fabric for concrete reinforcement shall conform to AASHTO M 55M. The mass and design of the fabric shall be as shown on the plans.

505.2.6 Dowel Bars and Tie Bars

Replace the entire text with the following:

505.2.6.1 Dowel Bars

- (1) Dowel bars shall be plain, round, smooth, coated bars, free from burrs or other deformations detrimental to free movement of the bar in the concrete; shall have at least one end sawed; and shall be of the size and length shown on the plans. Dowel bars shall conform to AASHTO M 31M, grade 300 or 400. Bend tests will not be required. The coating shall be a thermosetting epoxy and conform to AASHTO M 254, type B. The coating applicator must have an epoxy coating plant certification by the Concrete Reinforcing Steel Institute. A surface treatment capable of preventing bond between the bar and the concrete shall be applied to the epoxy-coated bars. Manufacturer applied treatments meeting the above criteria will be allowed. Field surface treatments shall be applied when the bars are placed in the magazine of a dowel bar inserter or after the dowel assembly has been fastened to the base course.
- (2) Sawed ends, sheared ends, cut ends, ends left bare during the coating process or ends with damaged coating do not have to be coated or patched.
- (3) Damage to the coating on the circumferential surface area caused during shipment, handling or installation does not have to be repaired in cases where the damaged area is 6 by 6 mm or smaller and the sum of all damaged areas in each 300 mm length does not exceed 2 percent of the circumferential surface area in each 300 mm length. All damaged areas larger than 6 mm square shall be repaired and all bars with total damage greater than 2 percent of bar circumferential surface area shall be rejected. The total circumferential surface area of the dowel bar covered by patching material shall not exceed 5 percent.

505.2.6.2 Tie Bars

505.2.6.2.1 General

- (1) Tie bars shall be deformed, coated, steel reinforcement bars of the size, length and shape called for on the plans.
- (2) Bent tie bars shall conform to grade 300 or 400 of AASHTO M 31M.
- (3) Straight tie bars shall conform to grade 300 or 400 of AASHTO M 31M. Bend tests will not be required.

505.2.6.2.2 Coating

- (1) The coating shall conform to the requirements contained in 505.2.4, except as follows:
- (2) Sawed ends, sheared ends, cut ends, ends left bare during the coating process or ends with damaged coating do not have to be coated or patched.
- (3) Damage to the coating on the circumferential surface area caused during shipment, handling or installation does not have to be repaired in cases where the maximum dimension of the damaged area is 1/4 inch (6 mm) or less and the sum of all damaged areas in each one-foot (300 mm) length does not exceed 2 percent of the circumferential surface area in each one-foot (300 mm) length. All damaged areas larger than 1/4 inch (6 mm) shall be repaired and all bars with total damage greater than 2 percent of bar circumferential surface area shall be rejected. The total circumferential surface area of the tie bar covered by patching material shall not exceed 5 percent.
- (4) All coated tied bars which require straightening to tie adjacent concrete together shall be field coated with compatible coating material at the bend location after straightening.

505.3.3 Splicing

Add the following to the end as paragraph fifteen:

- (15) Sheets of welded steel wire fabric shall overlap each other sufficiently to maintain a uniform strength and shall be securely fastened at the ends and edges. The edge lap shall be not less than one mesh in width.

505.3.4 Placing and Fastening

Replace paragraph ten with the following:

- (10) Coated bars shall be tied using a procedure, equipment, and materials that will not damage or cut the coating. Ties for use with coated reinforcement shall be an approved plastic or nonmetallic material; stainless steel wire; or nylon, epoxy, or plastic-coated wire.

506.2.4.3 Casting

Replace paragraph one with the following:

- (1) The contractor shall provide a name plate cast to conform to dimensions and details the plans show.

506.2.6.2. Preformed Fabric, Class A

Replace the entire text with the following:

- (1) This material consists of preformed fabric pads composed of multiple layers of 8-ounce (227 g) cotton duck impregnated and bound with high-quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness. The number of plies shall be such as to produce the specified thickness after compression and vulcanizing. The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 pounds per square inch (69 MPa) without detrimental extrusion or reduction in thickness, under testing conducted in accordance with MIL-C-882E procedures.

506.2.6.3. Non-Laminated Elastomeric

Replace paragraph two and the entire table of required physical properties with the following:

- (2) The pads shall conform to the following physical properties:

	NATURAL RUBBER	CHLOROPRENE
Grade (durometer)	60	60
Physical properties		
Hardness (ASTM D 2240)	60±5	60±5
Tensile strength, kPa (ASTM D 412)	15 500	15 500
Ultimate elongation, min. percent	400	350
Heat resistance, 70 hrs. at 70 C (ASTM D 573)		
Hardness, max. points change	+10	+15
Tensile strength, max. percent change	-25	-15
Ultimate elongation, max. percent change	-25	-40
Compression set (ASTM D 395, Method B)		
22 hrs. at 70 C max. percent	25	N.A.
22 hrs. at 100 C max. percent	N.A.	35
Ozone (ASTM D 1149), 20 percent strain, 38±1 C, mounting procedure ASTM D 518, method A		
25 pphm ozone in air by volume, 48 hrs.	No cracks	N.A.
100 pphm ozone in air by volume, 100 hrs.	N.A.	No cracks

506.2.6.4.3 Testing

Replace paragraph two with the following:

- (2) The pads shall conform to the following physical properties:

	NATURAL RUBBER	CHLOROPRENE
Adhesion test:		
Bond made during vulcanization, (ASTM D 429, method B)	18 kg/25 mm	18 kg/25 mm
Low temperature test:		
Brittleness at -40 C, (ASTM D746, procedure B)	No failure	No failure

507.2.2.6.1 General

Replace paragraph three with the following:

- (3) Unless otherwise specifically specified in the contract, the preservative treatment of structural lumber and timber shall be with one of the following: creosote- coal tar solution, a pentachlorophenol solution in petroleum solvent, a chromated copper arsenate solution, an ammoniacal copper arsenate solution, an ammoniacal copper zinc arsenate solution, a copper naphthenate solution, or an ammoniacal copper quat solution, except that Coastal Douglas Fir shall not be treated with chromated copper arsenate or ammoniacal copper quat, and Hem-Fir shall not be treated with copper naphthenate.

Add the following to the end as paragraph eleven:

- (11) The ammoniacal copper quat solution shall conform to the requirements specified under 507.2.3.8.

Add the following new subsection.

507.2.3.8 Ammoniacal Copper Quat

- (1) Ammoniacal copper quat solution used in the preservative treatment of lumber and timber shall conform to type D, as specified in AWWA P5.
-

508.5.3 Timber Piling, Delivered

Replace paragraph two with the following:

- (2) The department will pay for preparing and pointing of salvaged pile cutoffs, designated by the engineer to be used for piling, at a price per piling prepared and pointed. This price will be determined by multiplying the contract unit price for Timber Piling, Delivered, Treated or Untreated, as the case may be, by 5 for US standard measure projects (2 for SI metric projects). This price shall be payment in full for furnishing all labor, tools, equipment and incidentals necessary to prepare the salvaged pile cutoff for driving.
-

509.1 Description

Replace paragraph three with the following:

- (3) The items of Preparation, Decks, Type 1; Preparation, Decks, Type 2; and Preparation, Approaches consists of the removal of all asphaltic patches and unsound or disintegrated areas of concrete decks and approach pavements as the plans show or as the engineer directs.

509.2 Materials

Replace paragraph four with the following:

- (4) The contractor shall use concrete for Joint Repair, Curb Repair, and Full Depth Deck Repair conforming to grade C, C-FA, C-S, C-IS, C-IP, D, or E Concrete Masonry as specified in section 501; except as follows:
 1. The mix temperature requirement specified in 501.11 shall not apply.
 2. The slump of grade E concrete may be increased to 3 inches (75 mm).
 3. Ready-Mixed Concrete may be used.
-

509.4.2 Preparation

Add the following between paragraphs one and two as paragraphs one-a and one-b:

- (1a) Under Preparation, Decks, Type 1, existing asphaltic patching and unsound bridge deck concrete shall be removed only to that depth which will expose 1/2 of the peripheral area of the top or bottom bar steel in the top mat of reinforcement.
 - (1b) Under Preparation, Decks, Type 2, existing unsound bridge deck concrete shall be removed below the limit of the type 1 removal described above. The minimum depth of type 2 removal shall be one inch (25 mm) below the bottom of the top or bottom bar steel in the top mat of reinforcement. Further removal shall be as the engineer directs.
-

509.4.3 Joint Repair

Replace paragraph two with the following:

- (2) The concrete at an existing joint to be replaced shall be removed to the limits the plans show, or as the engineer directs. The bottom edge of the deck shall have a 1/2 inch (13 mm) deep saw cut placed at the line of removal to control concrete breakout or have the line of removal covered by a 1 1/2 inch (38 mm) thick layer of concrete to cover all reinforcing steel exposed during joint repair. The contractor shall use removal equipment that will not cause damage to the portion of the concrete floor, curbs and reinforcing steel that is to remain in place. The contractor shall not use tractor-mounted rams for removal operations within 9 inches (225 mm) of the edge, or within the depth of the slab from the edge, whichever is less.
-

509.5 Method of Measurement

Replace paragraph two with the following:

- (2) The department will measure Preparation, Decks, Type 1; Preparation, Decks, Type 2; and Preparation, Approaches by the square yard (m²) acceptably completed. Areas of type 2 removal will not be subtracted from areas of type 1 removal. Areas of Full Depth Deck Repair directed by the engineer prior to beginning the type 1 or type 2 deck removals will be subtracted from the areas of the type 1 or type 2 removals. Areas of Full Depth Deck Repair directed by the engineer after type 1 or type 2 deck removals are underway will not be subtracted from the areas of the type 1 or type 2 removals. Areas of Joint Repair will not be measured under these items.
-

509.6.2 Preparation

Replace the entire text with the following:

- (1) The department will pay for Preparation, Decks, Type 1, Preparation, Decks, Type 2 or Preparation, Approaches, as measured above, at the contract unit price. That price is full compensation for removing asphaltic patches and unsound concrete; for disposal of waste materials; and for furnishing all equipment, tools, labor and incidentals necessary to complete the work in accordance with the contract.

509.6.6 Full Depth Deck Repair

Replace paragraph one with the following:

- (1) The department will pay for Full Depth Deck Repair, as measured above, at the contract unit price. That price is full compensation for the complete removal of the deteriorated concrete areas; for disposal of waste material; for forming; for salvaging and using the existing bar steel reinforcement; and for furnishing all equipment, tools, labor and incidentals necessary to complete work in accordance with the contract. This item will be paid at the contract unit price regardless of whether it is directed by the engineer before or after beginning the type 1 or type 2 removals.

510.5.1 Cast In Place Concrete Piling, Delivered and Driven

Replace paragraph two with the following:

- (2) The department will pay for field splices for necessary extensions to ordered and delivered lengths of piling at the total of one splice per pile; if the pile, when delivered, was at least the length shown on the plan, and the spliced pile has been driven and accepted. Splices meeting these qualifying conditions will be paid for at a unit price each, determined by multiplying the contract unit price for Cast In Place Concrete Piling, Delivered and Driven, (Size), by 6 for US standard measure projects (2 for SI metric projects). This price shall be payment in full for performing all welding and for furnishing all labor, tools, equipment, welding materials and incidentals, except lengths of piling, necessary to complete each splice.

511.5 Basis of Payment

Replace paragraph two with the following:

- (2) The department will pay for field splices for necessary extensions to ordered and delivered lengths of piling at the total of one splice per pile; if the pile, when delivered, was at least the length shown on the plan, and the spliced pile has been driven and accepted. Splices meeting these qualifying conditions will be paid for at a unit price each, determined by multiplying the contract unit price for Steel Piling, Delivered and Driven, (HP Size Mass), by 9 for US standard measure projects (3 for SI metric projects). This price shall be payment in full for performing all welding and for furnishing all labor, tools, equipment, welding materials and incidentals, except lengths of piling, necessary to complete each splice.

512.4.2 Permanent Steel Sheet Piling, Driven

Replace the entire text with the following:

- (1) The department will measure Permanent Steel Sheet Piling, Driven by the square foot (m²) of wall acceptably completed. The department will measure the area of the wall from the sheet pile tip elevation to the top cutoff. The department will make no allowance for overlap of the piles.

512.4.3 Temporary Steel Sheet Piling

Replace the entire text with the following:

- (1) The department will measure Temporary Steel Sheet Piling by the square foot (m²) of wall acceptably completed. The department will measure the area of the wall from the sheet pile tip elevation to the retained grade elevation plus an additional one foot (300 mm) height of wall above the retained grade. The department will make no allowance for overlap of the piles.

520.3.3 Laying Pipe

Add the following as paragraph four:

- (4) At the contractor's option, sealers meeting the requirements of 607.2.3, 607.2.4, 607.2.5 or 607.2.6 may be used instead of the geotextile fabric joint wrap. Construction methods for sealing the joints with these sealers shall comply with 607.3.4. There shall be no additional compensation to the contractor for using sealers instead of geotextile fabric.

520.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Culvert Pipe, (Class), Pipe Cattle Pass, or Temporary Culvert Pipe, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including bands, geotextile joint wrap when required, and joint tie when required; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.
-

521.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Corrugated Steel Culvert Pipe, Corrugated Steel Pipe Arch or Corrugated Steel Pipe Cattle Pass, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe or pipe arch, including bands and concrete walkway for pipe cattle pass; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone masonry headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.
-

522.2.2 Reinforced Concrete Pipe

Replace paragraph one with the following:

- (1) The contractor shall provide reinforced concrete pipe for culverts that conforms to AASHTO M 170M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m³). The combination of cementitious materials used in the concrete shall be one of the following:
 - Portland cement only.
 - Portland blast furnace slag cement only.
 - Portland pozzolan cement only.
 - A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
 - A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.
-

522.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Reinforced Concrete Culvert Pipe (Class) or Reinforced Concrete Pipe Cattle Pass, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including concrete walkway for pipe cattle pass, geotextile joint wrap, and joint ties when required; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone masonry headwalls will be paid for in accordance with the provisions of the specifications for items of work involved.

523.2.2 Reinforced Concrete Horizontal Elliptical Pipe

Replace paragraph one with the following:

- (1) The contractor shall provide reinforced concrete horizontal elliptical pipe for culverts that conforms to AASHTO M 207M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m³). The combination of cementitious materials used in the concrete shall be one of the following:
 - Portland cement only.
 - Portland blast furnace slag cement only.
 - Portland pozzolan cement only.
 - A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
 - A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.

523.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Reinforced Concrete Horizontal Elliptical Culvert Pipe (Class), as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, geotextile joint wrapping, and joint ties when required; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

524.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Salvaged Culvert Pipe, Salvaged Corrugated Steel Pipe Arch or Salvaged Pipe Cattle Pass, as measured above, at the contract unit price. That price is full compensation for excavating and removing pipe from existing location, cleaning and transporting; for all excavation, including foundation or bed and any associated dewatering; for placing pipe, including the furnishing of any necessary new bands; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; for furnishing and placing geotextile joint wrap when required and joint ties when required and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

525.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Corrugated Aluminum Culvert Pipe, as measured above, at the contract unit price. That price is full compensation for for furnishing, hauling and placing the pipe, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone masonry headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

528.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Polymer Coated Corrugated Steel Culvert Pipe or Polymer Coated Corrugated Steel Pipe Arch, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe or pipe arch, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

529.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Aluminum Coated Corrugated Steel Culvert Pipe or Aluminum Coated Corrugated Steel Pipe Arch, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe or pipe arch, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

530.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Corrugated Polyethylene Culvert Pipe, as measured above, at the contract unit price. That price is full compensation for furnishing, hauling and placing the pipe, including bands; for all excavation, including foundation or bed and any associated dewatering; for furnishing and placing Granular Backfill or graded aggregate for granular foundation or cushion; for backfilling, except as provided below; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work. Concrete or stone headwalls will be paid for in accordance with the provisions of the specifications for the items of work involved.

PART VI INCIDENTAL CONSTRUCTION

601.2 Materials

Replace paragraph two with the following:

- (2) The contractor shall provide concrete masonry that conforms to the requirements for concrete masonry, grade A, A-2, A-FA, A-S, A-S2, A-IS or A-IP as specified in section 501.
-

601.4.6 Protection and Curing

Replace paragraph two with the following:

- (2) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10.
-

602.2 Materials

Replace paragraph two with the following:

- (2) The contractor shall provide concrete masonry that conforms to the requirements for concrete masonry, grade A, A-2, A-FA, A-S, A-S2, A-IS or A-IP as specified in section 501.
-

602.3.1.6 Curing and Protection

Replace the entire text with the following:

- (1) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10. The contractor shall protect sidewalks as specified for concrete pavement in 415.5.14, except that the engineer may allow the contractor to open sidewalks to pedestrian traffic after the concrete has developed sufficient strength to prevent damage to the surface.
-

603.1 Description

Replace paragraphs six through nine with the following:

- (6) Temporary Precast Concrete Barrier, Contractor Furnished and Delivered, consists of the contractor furnishing, delivering to the worksite(s) within the project, and removing precast reinforced concrete barrier conforming to the shape, dimensions and details shown on the plans.
 - (7) Temporary Precast Concrete Barrier, State Owned, Contractor Delivered consists of the contractor loading the state owned precast reinforced concrete barrier at the designated site, delivering it to the worksite(s) within the project, and removing and returning it to the designated site.
 - (8) Temporary Precast Concrete Barrier, Contractor Furnished, Contractor Installed consists of the contractor installing, and subsequently moving and reinstalling, precast reinforced concrete barrier furnished by the contractor. Subsequent moving and reinstalling shall be as identified in the contract or as the engineer directs.
 - (9) Temporary Precast Concrete Barrier, State Owned, Contractor Installed consists of the contractor installing, and subsequently moving and reinstalling, state owned precast reinforced concrete barrier. Subsequent moving and reinstalling shall be as identified in the contract or as the engineer directs.
-

603.2 Materials

Replace paragraph two with the following:

- (2) The contractor shall provide concrete masonry that conforms to the requirements for concrete masonry, grade A, A-2, A-FA, A-S, A-S2, A-IS or A-IP as specified in section 501.

603.3.3.2 Contractor Furnished and Delivered

Replace paragraph one with the following:

- (1) The contractor shall furnish and deliver the temporary precast barrier to project worksites and remove it from the project upon completion of the work. The contractor shall deliver the temporary precast barrier to a project worksite in one of the following ways:
 1. Deliver the temporary precast barrier from outside the project.
 2. Load the temporary precast barrier onto a truck from a different worksite within the project, haul it, and unload it.

603.3.3.4 State Owned, Contractor Delivered

Replace the entire text with the following:

- (1) The contractor shall deliver the state owned temporary precast barrier to project worksites and remove it from the project upon completion of the work. The contractor shall deliver the state owned temporary precast barrier to a project worksite in one of the following ways:
 1. Deliver the state owned temporary precast barrier from the state stockpile site.
 2. Load the state owned temporary precast barrier onto a truck from a different worksite within the project, haul it, and unload it.
- (2) The contractor shall provide connecting pins to connect barrier sections together. The pins shall remain the property of the contractor after completion of the work.
- (3) The contractor shall replace missing or damaged reflective delineators with approved reflective delineators at maximum intervals of 25 feet (7.6 m) on the vertical face of the barrier exposed to traffic.
- (4) Upon completion of the work, the contractor shall return the state owned precast temporary barrier to the original state stockpile site or to a location designated in the special provisions.

603.4 Method of Measurement

Replace paragraphs two and three with the following:

- (2) The department will measure Temporary Precast Concrete Barrier, Contractor Furnished and Delivered or Temporary Precast Concrete Barrier, State Owned, Contractor Delivered, as applicable to the contract, once for each worksite within the project if that delivery includes a truck haul.
- (3) The department will measure Temporary Precast Concrete Barrier, Contractor Furnished, Contractor Installed and Temporary Precast Concrete Barrier, State Owned, Contractor Installed by the lineal foot (m), measured in-place along the base of the barrier. The department will measure each initial installation acceptably completed and, where the contract specifies or the engineer directs a move, each re-installation acceptably completed.

603.5.2 Temporary Barrier

Replace the entire text with the following:

- (1) The department will pay for Temporary Precast Concrete Barrier, Contractor Furnished and Delivered, as measured above, at the contract unit price. That price is full compensation for furnishing acceptable concrete barrier including reflectors; for delivery; for removal after completion of the work; and for all labor, tools, equipment, materials and incidentals necessary to complete the work, including disposal.

- (2) The department will pay for Temporary Precast Concrete Barrier, State Owned, Contractor Delivered, as measured above, at the contract unit price. That price is full compensation for pickup, hauling and, delivery; for furnishing connecting pins; for furnishing and installing necessary reflectors; for removal and return to original pickup site or another designated location after completion of the work; and for all labor, tools, equipment, materials and incidentals necessary to complete the work.
 - (3) The department will pay for Temporary Precast Concrete Barrier, Contractor Furnished, Contractor Installed, as measured above, at the contract unit price. That price is full compensation for installing acceptable concrete barrier; and for all labor, tools, equipment and incidentals necessary to complete the work.
 - (4) The department will pay for Temporary Precast Concrete Barrier, State Owned, Contractor Installed, as measured above, at the contract unit price. That price is full compensation for installing acceptable concrete barrier; and for all labor, tools, equipment and incidentals necessary to complete the work.
-

604.3.3.1 General

Replace paragraph two with the following:

- (2) The contractor shall cure concrete slope paving as specified for concrete pavement in 415.5.10. If the impervious coating method is used, the contractor shall provide clear or translucent membrane curing material as specified in 502.2.3 for curing concrete in structures. During cold weather, the contractor shall protect the concrete as specified in 415.5.13 for concrete pavement.
-

606.3.4 Grouted Riprap

Replace paragraph two with the following:

- (2) The contractor shall place grout from the bottom to the top and the sweep the surface with a stiff broom. After grouting is completed, the contractor shall cure the surface as specified for concrete pavement in 415.5.10. If the impervious coating method is used, the contractor shall provide clear or translucent membrane curing material as specified in 502.2.3 for curing concrete in structures. During cold weather, the contractor shall protect the concrete as specified in 415.5.13 for concrete pavement.
-

608.2 Materials

Replace paragraph two with the following:

- (2) The contractor shall provide reinforced concrete pipe intended for storm sewers that conforms to AASHTO M 170M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m³). The combination of cementitious materials used in the concrete shall be one of the following:
 - Portland cement only.
 - Portland blast furnace slag cement only.
 - Portland pozzolan cement only.
 - A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
 - A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.
 - (3) Regardless of the basis of acceptance of the pipe, the placement of reinforcement shall conform to AASHTO M 170M.
-

610.2 Materials

Replace paragraph two with the following:

- (2) The contractor shall provide reinforced concrete horizontal elliptical pipe for storm sewers that conforms to AASHTO M 207M, for the class of pipe specified, except for the following requirements. The concrete mixture shall not contain less than 565 lbs of cementitious materials per cubic yard (335 kg/m³). The combination of cementitious materials used in the concrete shall be one of the following:
- Portland cement only.
 - Portland blast furnace slag cement only.
 - Portland pozzolan cement only.
 - A combination of portland cement and fly ash where the fly ash is between 5 and 25 percent by weight of total cementitious material.
 - A combination of portland cement and ground granulated blast furnace slag where the slag is between 5 and 25 percent by weight of total cementitious material.
-

612.6 Basis of Payment

Replace paragraph one with the following:

- (1) The department will pay for the specified size Pipe Underdrain (Size); Pipe Underdrain, Unperforated (Size); Pipe Underdrain, Wrapped (Size); Pipe Underdrain, Wrapped and Plowed (Size); or Pipe Underdrain, Drain Tile (Size), as measured above, at the contract unit price. That price is full compensation for furnishing, transporting, handling and placing all materials, including pipe, geotextile wrapping, connections, fittings, rodent screens and caps or plugs; for all excavation, plowing and recompaction, salvage and placement of upper tillable or agricultural soil suitable for supporting vegetation, disposal of surplus material and restoring the site of the work; for all backfill, except as provided below; and for all labor, tools, equipment and incidentals necessary to complete the work. The department will measure and pay for open-graded material required for trench backfill in the edgedrain system for concrete pavements under Crushed Aggregate Base Course, Open Graded Number 1 or Number 2.
-

614.1 Description

Replace paragraph one with the following:

- (1) This work consists of the construction of cable guard fence, steel plate beam guard, steel thrie beam structure approach, anchorages, terminal ends, crash cushions including replacement cartridges, impact attenuators and marker posts; the construction and removal of temporary steel plate beam guard and anchorages; the salvaging of guard fence; and the adjusting of steel plate beam guard; all at the locations and in accordance with the design and details indicated on the plans and provided by the contract.

Add the following to the end as paragraphs twenty-two and twenty-three:

- (22) Steel Plate Beam Guard, Slotted Rail Terminal, consists of furnishing and installing slotted rail terminal ends for Steel Plate Beam Guard.
- (23) Steel Plate Beam Guard, Energy Absorbing Terminal, consists of furnishing and installing energy absorbing terminal ends for Steel Plate Beam Guard.
-

Add the following new subsection:

614.2.3.1 Energy Absorbing Terminal

- (1) Materials furnished for use in energy absorbing terminals for steel plate beam guard shall conform to the manufacturer's specifications.
-

Add the following new subsection:

614.3.3.1 Energy Absorbing Terminal

- (1) Energy absorbing terminals for steel plate beam guard shall be installed in accordance with the manufacturer's instructions, the plans and pertinent parts of these specifications.

614.4 Method of Measurement

Replace paragraph two with the following:

- (2) The department will measure Steel Plate Beam Guard (Class), Temporary Steel Plate Beam Guard, or Adjusting Steel Plate Beam Guard by the lineal foot (m) acceptably completed, measured along the face of the rail element the details show. The department will measure Steel Plate Beam Median Guard by the lineal foot (m) acceptably completed, measured along the centerline of the completed installation.

Replace paragraph four with the following:

- (4) The department will measure Marker Posts; Marker Posts for Right of Way; Anchorages for Cable Guard Fence; Anchorages for Steel Plate Beam Guard; Anchorages for Temporary Steel Plate Beam Guard; Anchor Assemblies for Steel Plate Beam Guard; Impact Attenuators; Steel Plate Beam Guard, Slotted Rail Terminal; and Steel Plate Beam Guard, Energy Absorbing Terminal as each individual unit acceptably completed.

614.5 Basis of Payment

Add the following to the end as paragraphs thirteen and fourteen:

- (13) The department will pay for Steel Plate Beam Guard, Slotted Rail Terminal, as measured above, at the contract unit price. That price is full compensation for furnishing and installing all materials required under this system; for setting and driving of posts; for all excavation, backfilling and disposal of surplus material; and for all labor, tools, equipment and incidentals necessary to complete the work.
- (14) The department will pay for Steel Plate Beam Guard, Energy Absorbing Rail Terminal, as measured above, at the contract unit price. That price is full compensation for furnishing and installing all materials required under the selected system; for setting and driving of posts; for all excavation, backfilling and disposal of surplus material; and for all labor, tools, equipment and incidentals necessary to complete the work.

620.1 Description

Replace the entire text with the following:

- (1) Concrete Corrugated Median consists of the construction of concrete corrugated median including nose section, placed in one course on a prepared foundation, at the locations and in reasonably close conformity with the design, dimensions, lines and grades; all as the plans show and the contract provides.
- (2) Concrete Median Blunt Nose consists of construction of a blunt concrete median nose section only, at the locations and to the design the plans show.
- (3) Concrete Median Sloped Nose consists of construction of a sloped concrete median nose section only, at the locations and to the design the plans show.

620.3.2 Placing Concrete

Replace paragraph five with the following:

- (5) The contractor shall cure the concrete as specified for concrete pavement in 415.5.10.

620.4 Method of Measurement

Replace the entire text with the following:

- (1) The department will measure Concrete Corrugated Median by the square foot (m²), including the nose section, acceptably completed.
 - (2) The department will measure Concrete Median Blunt Nose and Concrete Median Sloped Nose by the square foot (m²), for the nose section only, acceptably completed.
-

620.5 Basis of Payment

Replace the entire text with the following:

- (1) The department will pay for Concrete Corrugated Median, as measured above including nose section, and will pay for Concrete Median Blunt Nose or Concrete Median Sloped Nose, as measured above for nose section only, at the contract unit price. That price is full compensation for preparation of foundation, for furnishing all materials, including concrete masonry, joint filler and tie bars; for hauling, placing, consolidating, shaping, finishing, curing and protecting the concrete; for disposal of surplus materials; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.
-

621.3.3 Curing and Protecting

Replace the entire text with the following:

- (1) The contractor shall cure cast in place concrete monuments for 72 hours by one of the methods described for concrete pavement in 415.5.10.
 - (2) The contractor shall protect placed concrete monuments as specified for concrete pavement in 415.5.14.
 - (3) The contractor shall protect cast in place concrete monuments from freezing for 7 days.
-

622.1 Description

Replace paragraph three with the following:

- (3) Asphaltic Shoulder Rumble Strip consists of the construction of milled asphaltic rumble strips on asphaltic concrete pavement shoulders.
-

622.3 Equipment

Replace the entire text with the following:

- (1) For constructing asphaltic shoulder rumble strips, the contractor shall use a rotary head milling machine with a cutting tip pattern that will produce a relatively smooth cut of the size, shape, spacing, and smoothness shown in the plan details. The cutting heads shall be on a suspension independent from that of the power unit to allow the heads to self-align with slopes and irregularities in the shoulder surface. The machine shall have a guidance system that provides consistent alignment of the rumble strips as shown on the plan.
-

622.4.2 Asphaltic Shoulder Rumble Strip

Replace the entire text with the following:

- (1) Prior to beginning the work, the contractor shall demonstrate to the engineer the ability to achieve the desired surface inside each depression without tearing or snagging the asphalt. The contractor shall place rumble strips according to the pattern and shape shown in the plan details. The contractor shall not install rumble strips prior to completion of the shoulder being used for live traffic.
- (2) The contractor shall remove milling debris by sweeping or vacuuming prior to opening adjacent lanes to traffic. The contractor shall dispose of wasted material as specified in 204.2.3.

- (3) At the end of each working day, the contractor shall remove all equipment and material to a location outside of the clear zone where it does not present a hazard to traffic; and clean the traveled way pavement and shoulder areas by sweeping or vacuuming.
-

622.5.2 Asphaltic Shoulder Rumble Strip

Replace the entire text with the following:

- (1) The department will measure Asphaltic Shoulder Rumble Strip by the lineal foot (m) along each side of the traveled way, from the center of the first groove in a segment to the center of the last groove in that segment, for areas acceptably completed.
-

622.6.2 Asphaltic Shoulder Rumble Strip

Replace the entire text with the following:

- (1) The department will pay for Asphaltic Shoulder Rumble Strip, as measured above, at the contract unit price. That price is full compensation for milling, sweeping or vacuuming, disposing of all waste materials; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.
-

625.3.2 Processing Topsoil or Salvaged Topsoil

Replace the entire text with the following:

- (1) All areas from which topsoil is procured shall be cleared, if necessary, by means of mowing weeds or other vegetation to a height of approximately 6 inches (150 mm), and freed from any litter such as brush, rock or foreign material of objectionable size or quantity.
 - (2) The humus-bearing soil shall then be stripped off taking care to avoid incorporation of any underlying sterile soil. The topsoil may then be stockpiled on the right of way or placed directly on the designated areas.
 - (3) Salvaged Topsoil shall include the removal of suitable humus bearing topsoil from the sites of the proposed roadway embankments within the limits of the assumed one to one slopes extending outward from the outer limits of the finished shoulders. Suitable topsoil lying within these limits necessary to cover the slopes for Salvaged Topsoil or Topsoil shall be removed. Unstable topsoil lying within these limits, in excess of amounts necessary to cover the slopes, shall be removed as specified in 205.3.3 and paid for as Excavation Below Subgrade.
 - (4) The removal of topsoil from the site of the proposed roadway lying outside of the assumed one to one slopes in embankment areas shall only be paid for under Salvaged Topsoil or Topsoil if that material is necessary to cover the slopes. Salvaged Topsoil in excess of the contract quantity shall be used to supplant the requirements for contract quantities of Topsoil to be furnished by the contractor from sources outside the right of way. Material excavated in excess of the amounts required to cover the slopes shall be disposed of by the contractor with no additional compensation as described in 205.3.11.
-

628.1 Description

Replace paragraph three with the following:

- (3) Erosion Bales: Furnish bales of straw, hay, or other suitable baled material to form erosion control structures other than ditch checks. Install and maintain at locations shown on the plans or as the engineer directs.

Add the following to the end as paragraphs nine through fourteen:

- (9) Polyethylene Sheeting: Furnish, install, maintain, and remove polyethylene sheeting at locations shown on the plans or as the engineer directs.
- (10) Turbidity Barriers: Furnish, assemble, install, maintain, and remove turbidity barriers at locations shown on the plans or as the engineer directs.

- (11) Soil Stabilizer: Furnish soil stabilizer as a soil bonding agent to prevent or minimize erosion. Install on exposed soil surfaces of temporary or permanent slopes as shown in the plans or as the engineer directs.
- (12) Furnish, install, maintain, and remove geotextile fabric, and fabric hold down and support systems for inlet protection as shown in the plans or as the engineer directs.
- Inlet Protection, Type A: Use around field inlets until establishing permanent soil stabilization and around pavement inlets before placing curb & gutter.
- Inlet Protection, Type B: Use on curb & gutter and pavement inlets after placement of the surrounding pavement surfaces.
- Inlet Protection, Type C: Use on inlets with curb boxes.
- (13) Temporary Ditch Checks: Furnish suitable ditch check materials. Install and maintain at locations shown on the plans or as the engineer directs.
- (14) Culvert Pipe Ditch Checks: Furnish, install, and maintain sandbags at the inlet end of culvert pipes at locations shown on the plans or as the engineer directs to control erosion.

628.2.5.1 Geotextile Fabric

Replace the entire text with the following:

- (1) The geotextile fabric consists of either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. Non-woven fabric may be needle punched, heat bonded, resin bonded, or combinations thereof. All fabric shall meet the following requirements:

TEST REQUIREMENT	METHOD	VALUE ^[1]
Minimum grab tensile strength In the machine direction	ASTM D 4632	120 lbs. (550 N)
Minimum grab tensile strength In the cross machine direction	ASTM D 4632	100 lbs. (450 N)
Maximum apparent opening size Equivalent standard sieve	ASTM D 4751	number 30 (600 µm)
Minimum permittivity	ASTM D 4491	0.05 s ⁻¹
Minimum ultraviolet stability Percent of strength retained after 500 hours of exposure.	ASTM D 4355	70 %

^[1] All numerical values represent minimum/maximum average roll values. (For example, the average of minimum test results on any roll in a lot should meet or exceed the minimum specified values.)

Add the following new subsection:

628.2.7 Sand Bags

- (1) The contractor shall provide bags made of canvas, burlap, nylon, or other engineer approved material filled with concrete sand or other engineer approved granular material.

Add the following new subsection:

628.2.8 Polyethylene Sheeting

- (1) The contractor shall provide 6 mil (0.152 mm) or thicker polyethylene sheeting conforming to ASTM D 4397.

Add the following new subsection:

628.2.9 Turbidity Barriers

- (1) The contractor shall provide barrier made of coated impervious fabric capable of containing all sediment at the location placed. It shall have a cable, with a 5/16 inch (8 mm) or larger diameter, capable of supporting the barrier at the required height above the water. It shall have a self-contained ballast that weighs at least 0.7 pound per foot (1 kg/m). The ballast may be either chain or flexible cable. Barrier ends shall have grommets to lace together adjoining sections. Anchor posts shall be steel fence posts, steel pipes, or steel channels.
- (2) The fabric shall meet the following requirements:

TEST REQUIREMENT	METHOD	VALUE ^[1]
Minimum grab tensile strength	ASTM D 4632	200 lbs (890 N)
Minimum puncture strength	ASTM D 4833	90 lbs (400 N)
Maximum permeability	ASTM D 4491	1x10 ⁻⁷ cm/s
Minimum ultraviolet stability Percent of strength retained after 500 hours of exposure	ASTM D 4355	70 %

^[1] All numerical values represent minimum/maximum average roll values. For example, the average of minimum test results on any roll in a lot should meet or exceed the minimum specified values.

Add the following new subsection:

628.2.10 Soil Stabilizer

- (1) Soil stabilizer Type A is either a cementitious soil binder added to wood cellulose fiber mulch or a bonded fiber matrix. Soil stabilizer Type B is a polyacrylimide.
 - (2) The contractor shall provide soil stabilizer products selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the bureau of highway construction.
-

Add the following new subsection:

628.2.11 Inlet Protection

- (1) The contractor shall use a type FF geotextile fabric conforming to 645.2.1 except that the fabric shall be polypropylene.
 - (2) The contractor shall provide type FF geotextile fabrics selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the bureau of highway construction.
-

628.3.1 General

Replace the entire text with the following:

- (1) The contractor shall deliver 25 percent of the plan quantity of Erosion Mat, Erosion Bales, Silt Fence, or manufactured alternative materials for Temporary Ditch Checks as the case may be, to the project site before construction begins unless the engineer directs otherwise. The contractor shall deliver the balance required, based on actual site conditions and determined by consulting with the engineer, in time to install each material as specified in the contract.
-

628.3.2 Erosion Mat

Add the following to the end as paragraph eight:

- (8) Type Urban erosion mat shall not be overlapped with Type Urban or other type erosion mat.
-

628.3.3 Erosion Bales

Replace the entire text with the following:

- (1) The contractor shall place bales at locations the plans show or as the engineer directs. The contractor shall maintain the bales as required including removal and disposal of sediment deposits. The contractor shall remove erosion bales after slopes and ditches are stable and turf develops enough to make future erosion unlikely. The engineer will determine when these criteria are met. The contractor may use bales as mulch. The contractor shall dispose of bales not used as mulch in a manner acceptable to the engineer. The contractor shall reshape ditches; fill sumps and trenches; dispose of excess eroded material; and topsoil, fertilize, and seed the affected area.
-

628.3.4.2 Inspection and Maintenance

Replace paragraph two with the following:

- (2) The contractor shall remove sediment deposits when the build-up exceeds approximately one half the volume capacity of the silt fence. The engineer may order the contractor to remove deposits if the engineer determines that one half the volume capacity of the silt fence has been exceeded. The contractor shall dress, to the existing grade, sediment deposits remaining in place after the silt fence is no longer required. The contractor shall topsoil, fertilize, and seed the affected area.
-

Add the following new subsection:

628.3.9 Polyethylene Sheeting

- (1) The contractor shall secure the sheeting from dislocation by wind or water. Before placement, the contractor shall remove stones, roots, sticks, and other materials that interfere with the sheeting bearing completely on the soil. The contractor shall overlap adjacent sheets a minimum of 3 feet (1 m) in the direction of flow and seal the edges with waterproof tape or other engineer approved method. The contractor shall patch damaged areas with sheeting overlapped a minimum of 3 feet (1 m) and seal the joints with waterproof tape or other engineer approved method. The contractor shall maintain the sheeting and make satisfactory repairs of damaged areas.
 - (2) Upon completion of the work, the contractor shall remove the polyethylene sheeting. The contractor shall assume ownership of all removed material.
-

Add the following new subsection:

628.3.10 Turbidity Barriers

- (1) The contractor shall place all barriers, before beginning adjacent construction, in a manner that causes minimum disturbance of the stream bed and banks. The barrier shall extend into the stream banks far enough to preclude washing out or erosion around the ends. The contractor shall drive posts securely into the stream bed at 10 foot (3 m) intervals along the alignment of the barrier installation. The contractor shall fasten the barrier to the posts and securely anchor the barrier load lines at the barrier ends and at 10 foot (3 m) intervals between the barrier ends, unless the engineer directs otherwise. The contractor shall provide additional anchoring as necessary to maintain the barrier location during construction operations. The contractor shall install sand bags as the plans show to anchor the barrier to the stream bed. The engineer may require additional sand bags to assure adequate performance. The contractor, as required by permit under 107.19, shall provide and anchor both danger buoys and navigational markers.
- (2) The contractor shall maintain the integrity of the barrier as necessary to contain erosion from adjacent construction operations. The contractor shall promptly correct all deficiencies. Maintenance of the barrier includes removing and disposing of accumulations of soil and other detrimental material.

- (3) The contractor shall remove the barrier after completion of the adjacent work. The contractor shall delay removal until accumulated soils and other suspended materials are removed and disposed of, and all suspended materials have settled. The contractor shall minimize disturbance of the stream bed and banks during the removal operation.
 - (4) If the engineer approves, the contractor may substitute sheet pile installed as a part of their construction operation for all or part of the turbidity barrier the plans show. If approved, the department will pay for the plan quantity of turbidity barrier replaced.
-

Add the following new subsection:

628.3.11 (Vacant)

Add the following new subsection:

628.3.12 Soil Stabilizer

628.3.12.1 Soil Stabilizer Type A

- (1) The contractor shall apply soil stabilizer with conventional hydraulic seeding equipment. The contractor shall take care to ensure that surrounding surfaces, structures, signs, trees, and shrubs are not over-sprayed. The engineer will not accept the work until the contractor satisfactorily cleans over-sprayed surfaces. The finished application shall be 3/16 inch (4 mm) to 1/4 inch (7 mm) thick.
- (2) For permanent slope applications, the contractor shall sow seed separately, before applying the soil stabilizer, to ensure that the seed has direct contact with the soil.

628.3.12.2 Soil Stabilizer Type B

- (1) The contractor shall apply soil stabilizer with conventional hydraulic seeding equipment or by dry spreading. The contractor shall apply the material at the manufacturer's recommended rate unless the engineer directs otherwise.
 - (2) For permanent slope applications, the contractor shall apply a department approved mulch when the soil stabilizer is applied or after it is applied to protect the seed.
-

Add the following new subsection:

628.3.13 Inlet Protection

- (1) For type C inlet protection the contractor shall use a wooden 2x4, wrapped and secured in type FF geotextile fabric, placed in front of the curb head as the plans show. The wood shall not block the entire opening of the curb box.
 - (2) For all types of inlet protection, the contractor may provide manufactured alternatives selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the bureau of highway construction.
-

Add the following new subsection:

628.3.14 Temporary Ditch Checks

- (1) The contractor shall construct temporary ditch checks using a double row of erosion bales or a manufactured alternative from the department's erosion control product acceptability list (PAL). The contractor shall place temporary ditch checks across ditches at locations the plans show or as the engineer directs immediately after shaping the ditches or slopes. The contractor shall excavate upstream sumps as the engineer directs.

- (2) The contractor shall remove sediment deposits when the build-up exceeds approximately one half the volume capacity of the erosion bale structure. The engineer may order the contractor to remove deposits if the engineer determines that one half the volume capacity of the erosion bale structure has been exceeded. The contractor shall dispose of excess sediment as the engineer directs.
 - (3) The contractor shall remove ditch checks after the slopes and ditches are stable and the turf develops enough to make future erosion unlikely. The engineer will determine when these criteria are met. The contractor may use bales as mulch. The contractor shall dispose of bales not used as mulch in a manner acceptable to the engineer. The contractor shall reshape the ditch; fill sumps and trenches; dispose of excess eroded material; and topsoil, fertilize, and seed the affected area.
-

Add the following new subsection:

628.3.15 Culvert Pipe Ditch Checks

- (1) The contractor shall install sand bag ditch checks the plans show or as the engineer directs immediately after installing new culverts. The contractor shall place sand bags on the inlet end of the culvert only. The contractor shall maintain the sand bags in place until slopes and ditches are stable and turf develops enough to make future erosion unlikely. The contractor shall remove and dispose of the used sand bags. The contractor shall remove accumulated sediment or spread it to form a surface suitable for seeding.
-

628.4.5 Silt Fence, Delivered

Replace the entire text with the following:

- (1) The department will measure Silt Fence, Delivered by the lineal foot (m) of acceptable fence delivered to the work and measured for payment in 628.4.6.
-

628.4.6 Silt Fence, Installed

Replace the entire text with the following:

- (1) The department will measure Silt Fence, Installed by the lineal foot (m) acceptably completed, measured along the base of the fence, center-to-center of end posts, for each section of fence.
-

Add the following new subsection:

628.4.13 Sand Bags

- (1) The department will not measure sand bags for payment. The department will consider sand bags incidental to the items of work that use sand bags.
-

Add the following new subsection:

628.4.14 Polyethylene Sheeting

- (1) The department will measure Polyethylene Sheeting by the square yard (m²) of surface acceptably covered. The department will not measure the quantity of material delivered separately.
-

Add the following new subsection:

628.4.15 Turbidity Barriers

- (1) The department will measure Turbidity Barrier by the square yard (m²) acceptably completed. The department will make no allowance for portions of the turbidity barrier considered as part of the anchorages, required overlaps, or having a bottom flap greater than 48 inches (1200 mm).
- (2) If sheet pile is substituted for turbidity barrier as allowed in 628.3.10, the department will measure that Turbidity Barrier as the plan quantity in square yards (m²) of material replaced.

Add the following new subsection:

628.4.16 Soil Stabilizer

- (1) The department will measure Soil Stabilizer, (Type) by the acre (ha) acceptably placed within the limits the contract designates or as the engineer directs.

Add the following new subsection:

628.4.17 Inlet Protection

- (1) The department will measure Inlet Protection, (Type) as each individual location and type acceptably installed and completed.

Add the following new subsection:

628.4.18 Temporary Ditch Checks, Delivered

- (1) The department will measure Temporary Ditch Checks, Delivered by the lineal foot (m) of acceptable material delivered to the project and measured for payment under 628.4.19.

Add the following new subsection:

628.4.19 Temporary Ditch Checks, Installed

- (1) The department will measure Temporary Ditch Checks, Installed by the lineal foot (m) acceptably completed. When erosion bales are used, the department will only measure the length across the ditch, not the length of each row of bales. The department will not measure ditch checks constructed with a single row of bales.

Add the following new subsection:

628.4.20 Culvert Pipe Ditch Checks

- (1) The department will measure Culvert Pipe Ditch Checks as each individual location acceptably installed and completed.

628.5.4 Erosion Bales, Installed

Replace paragraph one with the following:

- (1) The department will pay for Erosion Bales, Installed at the contract unit price each. That price is full compensation for placing all materials, including stakes; for anchoring the bales; for all excavation, including trenches and sumps; for removing excess sediment during construction; for removal and disposal of the bales and all waste or surplus materials, including eroded materials; for shaping and restoring ditches; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

628.5.5 Silt Fence, Delivered

Replace the entire text with the following:

- (1) The department will pay for Silt Fence, Delivered, as measured above, at the contract unit price. That price is full compensation for furnishing and delivering acceptable silt fence for the work, including all miscellaneous materials; for protection and storage on the project; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance with the contract.

628.5.6 Silt Fence, Installed

Replace the entire text with the following:

- (1) The department will pay for Silt Fence, Installed, as measured above, at the contract unit price. That price is full compensation for erecting fence, including all excavation, placing of posts, backfilling, and attaching geotextile fabric; for removing the fence at completion of the project; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance with the contract.

Add the following new subsection:

628.5.13 Polyethylene Sheeting

- (1) The department will pay for Polyethylene Sheeting at the contract unit price. That price is full compensation for furnishing and delivering the polyethylene sheeting to the project site; for storing on the project; for installing the sheeting; for all excavation and backfilling; for the securing the sheeting and sealing the edges of the sheeting; for removal and disposal of the sheeting and surplus materials; and for all labor, tools, equipment and incidentals necessary to complete the work.

Add the following new subsection:

628.5.14 Turbidity Barriers

- (1) The department will pay for Turbidity Barriers at the contract unit price. That price is full compensation for furnishing, assembling, installing, maintaining, and removing the turbidity barrier; and for all labor, tools, equipment, sandbags, buoys, navigational markers, anchors, anchor ropes and incidentals necessary to complete the work.
- (2) If sheet pile is substituted for turbidity barrier as allowed in 628.3.10, the department will pay for the plan quantity of Turbidity Barrier replaced.

Add the following new subsection:

628.5.15 Soil Stabilizer

- (1) The department will pay for Soil Stabilizer, (Type) at the contract unit price. That price is full compensation for furnishing, mixing, and applying soil stabilizer; and for all labor, equipment, tools and incidentals necessary to complete the work.

Add the following new subsection:

628.5.16 Inlet Protection

- (1) The department will pay for Inlet Protection, (Type) at the contract unit price each. That price is full compensation for furnishing, transporting, and installing all materials; for maintaining and removing the Inlet Protection, (Type) devices; and for furnishing all labor, tools, and equipment necessary to complete the work.

Add the following new subsection:

628.5.17 Temporary Ditch Checks, Delivered

- (1) The department will pay for Temporary Ditch Checks, Delivered, as measured above, at the contract unit price. That price is full compensation for furnishing and delivering the ditch check material, including stakes, to the project site; for protection and storage on the project; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Add the following new subsection:

628.5.18 Temporary Ditch Checks, Installed

- (1) The department will pay for Temporary Ditch Checks, Installed, as measured above, at the contract unit price. That price is full compensation for installing and removing ditch checks at project completion or as the engineer directs; for repairing and reseeding damaged areas; for disposal of all surplus and waste material; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.
- (2) The department will not pay for installing ditch checks if constructed of a single row of erosion bales.

Add the following new subsection:

628.5.19 Culvert Pipe Ditch Checks

- (1) The department will pay for Culvert Pipe Ditch Checks, as measured above, at the contract unit price each. That price is full compensation for furnishing and installing sand bags; for all excavation; for removal and disposal of the sand bags and all waste, surplus, or eroded materials; for shaping and restoring the area; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

630.2.1.5.1.1.1 Composition

Revise the entry for Salt Grass in the first table of paragraph two as follows:

SPECIES COMMON NAME	SPECIES BOTANICAL NAME	ACCEPTABLE VARIETIES
Salt Grass	Puccinella distans	Fult's
	Puccinella distans	Salty

631.1 Description

Replace paragraph two with the following:

- (2) The contractor shall provide the type of sod the plan designates or the engineer directs consistent with the following criteria:
 - Lawn Sod: Use in areas where the property owner will provide all necessary maintenance, including mowing, fertilizing, and watering, and where the primary objective is for aesthetics. Do not use in urban or suburban areas where maintenance is limited to mowing by the property owner or municipality.
 - Erosion Control Sod: Use on limited areas of a project where a quick stand of vegetation is desired for erosion control purposes, or in urban or suburban areas where the primary objective is aesthetics, but where maintenance is limited to mowing.
 - Erosion Control Sod, Sandy Soil: Use in the same areas as Erosion Control Sod, but where sandy or gravelly soils predominate.

Add the following to the end as paragraph three:

- (3) Watering Sodded Areas consists of furnishing and applying water to sodded areas.

631.2.1 Sod

Add to the end as paragraphs five through seven:

- (5) Lawn Sod shall have a lush appearance, be dense, have a uniform texture, and be bright in color throughout. The sod shall not contain blade widths of 1/4 inch (7 mm) or greater. The sod shall be weed free and shall contain no more than 3/8 inch (10 mm) of thatch over the base soil. The sod shall consist of a blend or mix of at least 4 fine-leaved turfgrasses. At least 2/3 of the grasses by mass, as determined by initial seeding proportions, shall be of improved/elite type Kentucky bluegrass varieties.
- (6) Erosion Control Sod shall be a low maintenance type, dense, and of uniform texture. The sod shall be free of noxious weeds and shall contain a combined total of 3 percent or less grassy weeds, sedges, broadleaf weeds, or coarse grasses. The sod shall consist of a blend or mix of at least 4 fine-leaved turfgrasses. At least 70 percent of the grasses by mass, as determined by initial seeding proportions, shall be of acceptable low maintenance varieties or species as listed by the UW Extension. This list may be obtained from the UW Madison, horticulture department, turfgrass extension.
- (7) Erosion Control Sod, Sandy Soil shall meet all requirements for Erosion Control Sod and shall be commercially produced on soil having 10 percent or less organic matter by mass.

631.4 Method of Measurement

Replace paragraph one with the following:

- (1) The department will measure sodding items by the square yard (m²) acceptably placed within the limits designated in the contract or as the engineer directs. The following are sodding items:
 - Lawn Sod.
 - Erosion Control Sod.
 - Erosion Control Sod, Sandy Soil.

631.5.1 Sodding

Replace paragraph one with the following:

- (1) The department will pay for sodding items, as measured above, at the contract unit price. That price is full compensation for preparing the earth bed; for furnishing, placing, staking, and rolling the sod; for watering unless otherwise provided; and for all labor, equipment, tools, and incidentals necessary to complete the work. The following are sodding items:
 - Lawn Sod.
 - Erosion Control Sod.
 - Erosion Control Sod, Sandy Soil.

633.2.1 Delineator Posts

Replace paragraph one with the following:

- (1) Posts shall be a flanged channel section of approximately the plan design, weigh 1.12 pounds per lineal foot (1.67 kg/m) or more before zinc coating, and be made of steel with the following properties:
 - Minimum tensile strength50 ksi (345 Mpa)
 - Minimum tensile yield strength.....36 ksi (250 Mpa)
 - Minimum elongation5.0 percent in 2 inches (50 mm)

633.2.3.2 Reflecting Requirements

Replace paragraph one with the following:

- (1) Regardless of reflector orientation, the brightness of each reflector shall equal or exceed the following:

DIVERGENCE ANGLE in degrees	ENTRANCE ANGLE in degrees	MINIMUM SPECIFIC INTENSITY in candela/foot-candle (cd/lx)	
		CRYSTAL	YELLOW
0.1	0	115 (10.7)	70 (6.5)
0.1	20	45 (4.2)	25 (2.3)

636.1 Description

Replace the entire text with the following:

- (1) This item of work consists of the construction of concrete masonry footings intended for supporting structural steel sign supports or sign bridges, in conformity with the requirements of the plans and specifications. Structural steel sign supports and sign bridges are described in section 641.
-

636.3.4 Placing Grout for Sign Bridges

Delete the entire text and replace the subsection heading with the following:

636.3.4 (Vacant)

636.5.1 Concrete Masonry

Replace paragraph one with the following:

- (1) The department will pay for Concrete Masonry, Sign Supports, as measured above, at the contract unit price. That price is full compensation for furnishing, transporting, placing and curing the concrete; for furnishing and removing casing when applicable; for furnishing and installing required ground rods; for all required excavation; for placing post stubs or anchor bolts, and for furnishing and placing electrical conduit if required; for clean-up, repair of damage and disposal of excavation and surplus materials; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.
-

637.2.2.2 Type H Reflective Sheeting

Replace paragraph one with the following:

- (1) Type H reflective sheeting shall comply with the following specification and requirements:

Specification: ASTM D 4956-93b.

Type: III

Class: 1

Reflectivity: 2

Durability: 2200 hours (except orange and reboundable sheeting)
500 hours (orange and reboundable sheeting)

Color: As specified in ASTM D 4956-93b

641.1 Description

Replace the entire text with the following:

- (1) This work consists of furnishing and erecting sign bridges and sign supports fabricated from aluminum or structural steel, or combination thereof, consisting of trusses, crossarms, columns, braces, walkway supports, walkway, grating, handrails, guard chains, poles, mast arms, anchor bolts and all incidentals and accessories necessary to complete the work in accordance with the requirements of the plans and specifications. The furnishing and placing of signs or lighting of signs, or placing of concrete supports, except as specified hereinafter for Overhead Sign Support, Structure ____, will not be a part of this work.
- (2) Sign Bridge, Single Pole Sign Support, One Sign, Structure ____ consists of furnishing and erecting single pole sign supports with attachments for signs facing in one direction.
- (3) Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____ consists of furnishing and erecting single pole sign supports with attachments for signs facing in opposite directions.
- (4) Sign Bridge, Cantilevered, Structure ____ consists of furnishing and erecting cantilevered sign bridges with a single supporting structure.
- (5) Sign Bridge, Structure Mounted, Structure ____ consists of furnishing and erecting sign bridges mounted on overhead roadway bridges.
- (6) Sign Bridge, Structure ____ consists of furnishing and erecting sign bridges with multiple supporting structures.
- (7) Overhead Sign Support, Structure ____ consists of furnishing and erecting commercially designed sign supports, fabricated from aluminum or steel, consisting of pole shafts, mast arms, anchor bolts, hardware, concrete supports and all other items necessary to complete the work in accordance with the requirements of the plan layout details and the contract.

641.2.9 Overhead Sign Supports

Replace paragraph one with the following:

- (1) The contractor shall provide commercially fabricated sign supports designed for an 85 mile per hour (137 km/h) wind load. Design and fabrication shall conform to AASHTO standards for structural supports for highway signs. The contractor shall submit shop drawings, design computations, and materials specifications for the engineer's review before erecting sign supports. A registered professional engineer shall sign and seal those drawings and certify that the design conforms to AASHTO standards and the contract.

641.3.3 Steel Sign Bridges

Replace paragraph six with the following:

- (6) (Vacant)

641.4 Method of Measurement

Replace the entire text with the following:

- (1) The department will measure the following items as a single lump sum unit for each sign bridge acceptably completed:
 - Sign Bridge, Single Pole Sign Support, One Sign, Structure ____
 - Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____
 - Sign Bridge, Cantilevered, Structure ____
 - Sign Bridge, Structure Mounted, Structure ____
 - Sign Bridge, Structure ____

- (2) The department will measure Overhead Sign Support, Structure _____ as a single lump sum unit for each overhead sign support acceptably completed.
-

641.5 Basis of Payment

Replace the entire text with the following:

641.5.1 Sign Bridges and Single Pole Sign Supports

- (1) The department will pay for the following items, as measured above, at the contract lump sum price for:
- Sign Bridge, Single Pole Sign Support, One Sign, Structure _____
 - Sign Bridge, Single Pole Sign Support, Two Signs, Structure _____
 - Sign Bridge, Cantilevered, Structure _____
 - Sign Bridge, Structure Mounted, Structure _____
 - Sign Bridge, Structure _____
- (2) That price is full compensation for furnishing all materials, including anchor bolts, dampeners when required in the structure plans, but not including concrete supports paid for separately as described in section 636; for fabricating, including all cutting, preparing, welding and zinc coating; for transporting and erecting; and for furnishing all labor, tools, equipment and incidentals necessary to complete this item of work in accordance with the contract.

641.5.2 Overhead Sign Supports

- (1) The department will pay for Overhead Sign Support, Structure _____, as measured above, at the contract lump sum price. That price is full compensation for designing the sign support structure including required concrete supports; for excavating; for furnishing all materials, including anchor bolts, pole shafts, mast arms, required reinforcing steel, and concrete; for fabricating, including all cutting, preparing, welding, and zinc coating; for placing and curing concrete supports; for transporting and erecting; and for furnishing all labor, tools, equipment, and incidentals necessary to complete this item of work in accordance with the contract.
-

642.2.1 General

Add the following to the end as paragraphs three and four:

- (3) A first aid kit shall be supplied by the contractor in each field office and field laboratory provided under the contract. The kits shall be readily accessible to project personnel. The contents of each kit shall be checked at least once each week and expended items shall be replenished. Each kit shall contain, at a minimum, a supply of latex or nitrile gloves, CPR masks, adhesive tape, pressure and cling bandages, antiseptic wipes, bite/sting swabs, cold packs, and safety goggles.
- (4) In situations where the eyes or body of a worker may be exposed to corrosive or potentially harmful materials, the contractor shall provide emergency use facilities capable of flushing the eyes or drenching the body of an exposed worker with water for 15 minutes.
-

643.1 Description

Replace paragraph one with the following:

- (1) This work consists of furnishing, erecting, maintaining, moving and removing traffic signs, including demountable legend plaques, pavement markings, drums, barricades, flexible tubular markers, arrow boards, lights and signals. This work shall be done in accordance with the latest revision of Part VI, Traffic Controls for Construction and Maintenance Operations of the Wisconsin Manual on Uniform Traffic Control Devices except as noted hereafter, the contract, and as the engineer directs. Sign sizes smaller than the standard sizes described in the manual shall not be used except where there are space limitations and as permitted in the manual.
-

643.2.1 General

Replace the entire text with the following:

- (1) Materials used in the work shall conform to the requirements specified in the Manual on Uniform Traffic Control Devices and the following:
 - (2) Retroreflective sheeting on drums, barricades and other devices shall be kept clean. Scratches, rips and tears in the sheeting shall be corrected promptly by the contractor.
 - (3) The retroreflectance of all drums, posts and barricades shall be maintained at a level not less than 50 percent of the minimum value required in 637.2.2.2 for type H reflective sheeting.
-

643.2.2.1 General

Replace paragraph one with the following:

- (1) Arrow boards shall conform to the requirements for arrow display, 6F-3, figure VI-9, type C, of the MUTCD, unless otherwise specified.
-

643.2.4 Drums

Replace the entire text with the following:

- (1) The contractor shall provide drums for traffic control made of nonmetallic material and fabricated to accept a type C or type A light. When required by the contract, each drum shall be equipped with a type C steady burn or type A low intensity flashing warning light securely attached to the drum. Each drum shall be weighted sufficiently with sand bags or other approved material to keep the drum in its intended location. Two piece drums shall not be fastened together or otherwise altered to perform in a way not intended by the manufacturer. Drums for traffic control shall meet the crashworthiness criteria of NCHRP report 350, test level 3. Upon request of the engineer, the contractor shall furnish a letter from the drum manufacturer or distributor which certifies that the drums meet the NCHRP 350 crashworthy requirements.
 - (2) The material used for reflectorization shall conform to or exceed the requirements of 637.2.2.2, and shall be suitable for use on reboundable traffic control devices. The material shall have had acceptable performance (good evaluation ratings) in 1-year tests in AASHTO's National Transportation Product Evaluation Program (NTPEP), with regard to shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, flexibility, and impact resistance.
-

643.2.5 Barricades

Replace the entire text with the following:

- (1) The reflective sheeting for all barricades shall conform to or exceed the requirements of 637.2.2.2, designed specifically for use on rigid traffic control devices. The sheeting shall have had good performance in 1-year tests in AASHTO's National Transportation Product Evaluation Program (NTPEP), with regard to shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, and impact resistance.

643.2.6.1 Flexible Tubular Marker Posts

Replace paragraphs two and three with the following:

- (2) Flexible tubular marker posts shall be made with materials resistant to extreme temperature changes in the range of -29 C to 71 C, ultraviolet light, ozone, hydrocarbons, stiffening with age, and a series of direct wheel impacts with speeds varying up to 105 km/h, and having the capability of immediately restoring itself to a vertical position when struck by a standard vehicle. Flexible tubular marker posts shall be selected from an approved products list maintained by the department. A current list of approved products may be obtained from the technology advancement unit of the bureau of highway construction. The posts shall meet the crashworthiness criteria of NCHRP report 350, test level 3. Upon request of the engineer, the contractor shall furnish a letter from the post manufacturer or distributor which certifies that the posts meet the NCHRP 350 crashworthy requirements. The posts shall exhibit good quality and shall be free of burns, discoloration, contamination and other objectionable marks or defects which affect appearance or serviceability.
- (3) The reflective sheeting for the flexible tubular marker posts shall meet or exceed the requirements of 637.2.2.2 and shall be suitable for use on reboundable traffic control devices. The sheeting shall have had acceptable performance, good evaluation ratings, in 1-year tests in AASHTO's National Transportation Product Evaluation Program (NTPEP), with regard to shrinkage, cracking, blistering, colorfastness, reflectivity, adhesion, flexibility, and impact resistance.

643.2.6.3 Tests

Delete the entire text and replace the subsection heading with the following:

643.2.6.3 (Vacant)

643.2.7 Hand Signaling Devices

Replace the entire text with the following:

- (1) The sign paddle shall be the primary hand-signaling device. Flag use shall be limited to emergency situations. The sign paddle shall be mounted on a rigid handle with a 5-foot (1520 mm) minimum mounting height to the bottom of the sign.

643.2.8.1 General

Add the following to the end as paragraphs four and five:

- (4) The sign face material for overlays shall match the base sign reflective sheeting material.
- (5) Non-word messages cannot be a sign overlay, except for the lane reduction transition sign, WO4-2.

643.2.8.2 Demountable Plaque Overlay

Replace paragraph two with the following:

- (2) The sign face material for the plaque shall be reflective sheeting meeting the requirements of 637.2.2.1 or 643.2.12.

643.2.8.3 Sheeting Overlay

Replace the entire text with the following:

- (1) The sheeting overlay shall be a pressure-sensitive sheeting meeting the requirements of 637.2.2.1 or 643.2.12.

Add the following new subsection:

643.2.12 Signs

643.2.12.1 General

- (1) Sign layouts shall be according to the FHWA's Manual of Standard Highway Signs, unless the plans show otherwise.
- (2) The contractor shall use the materials and methods specified in section 637 for type II signs to manufacture and assemble signs, with the following modifications:
 1. A good exterior grade A-B plywood with a 13 mm minimum thickness will be acceptable as a sign base.
 2. Signs with fluorescent orange prismatic sheeting shall also meet the requirements of 643.2.12.2.
 3. Orange work zone traffic control signs mounted on portable sign supports may be fluorescent retroreflective roll-up signs as further specified in 643.2.12.2.
- (3) Standard construction signs shall have all messages and borders stenciled directly on the sign background, except as specified in 643.2.8 for sign overlays.
- (4) The sign face material for signs R1-1 "Stop" R1-2 "Yield", R5-1 "Do Not Enter", and R5-1a or R5-9 "Wrong Way" shall conform to 637.2.2.2. All other sign face material shall conform to 637.2.2.1, except as specified in the contract or except as specified hereinafter for orange work zone traffic control signs.
- (5) Retroreflective sheeting on signs shall be kept clean. Scratches, rips and tears in the sheeting shall be corrected promptly by the contractor. Signs with abrasions, asphalt splatter, or concrete slurry on the sign face such that the message or any letters are illegible, shall be corrected or replaced. Signs with noticeable color fading shall be replaced.
- (6) The retroreflectance of all signs, except orange work zone traffic control signs, shall be maintained at a level not less than 75 percent of the minimum value required in 637.2.2.1 for signs with standard reflective sheeting and not less than 50 percent of the minimum value required in 637.2.2.2 for signs with type H reflective sheeting.

643.2.12.2 Orange Work Zone Traffic Control Signs

- (1) The sign face material for orange work zone traffic control signs shall be fluorescent orange prismatic retroreflective sheeting having an initial coefficient of retroreflection of not less than 100 $\text{cd}/1\text{x}/\text{m}^2$ at a 0.2 degree observation angle and a - 4 degree entrance angle, and 64 $\text{cd}/1\text{x}/\text{m}^2$ at a 0.5 degree observation angle and a - 4 degree entrance angle. The sheeting color shall comply with the following chromaticity coordinates and luminance factor:

LUMINANCE

<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		Factor (Y%)	
X	Y	X	Y	X	Y	X	Y	Min.	Max.
0.583	0.416	0.523	0.397	0.560	0.360	0.631	0.369	28	---

- (2) The sheeting color and initial coefficient of retroreflection shall be verified by independent testing as required by the department.
- (3) The following work zone traffic control signs do not need to have fluorescent orange prismatic sheeting; materials meeting the requirements of 637.2.2.1 may be used:
 1. G20-2a "End Road Work" signs.
 2. M4-9/M4-8 series "Detour" signs, and MO5-x/MO6-x arrow plaques used in detour sign assemblies.
 3. Special fixed message signs as specified in 643.2.11.
 4. Orange plaques which supplement or cover a portion of existing green guide signs.

- (4) Fluorescent orange prismatic sheeting shall be applied to new plywood bases, new aluminum bases, or reconditioned aluminum bases which have had all previous sheeting materials removed. Existing signs with prismatic sheeting shall not have their messages removed and new messages reapplied to the sign face except as specified for overlays in 643.2.8. Signs mounted on portable sign supports may be fluorescent retroreflective roll-up signs which meet or exceed the coefficient of retroreflection requirements of 643.2.12. Portable sign supports used with fluorescent retroreflective roll-up signs shall comply with the crashworthiness criteria of NCHRP Report 350, Test Level 3. Upon request of the engineer, the contractor shall provide written certification from the sign support distributor or manufacturer that the portable sign support was manufactured in accordance with a design accepted by the FHWA as meeting the NCHRP 350, test level 3 crashworthy requirements.
 - (5) The retroreflectance of all signs with fluorescent orange prismatic sheeting shall be maintained at a level not less than 50 cd/ft^2 (50 cd/lx/m^2) at a 0.2 degree observation angle and - 4.0 degree entrance angle, and 32 cd/ft^2 (32 cd/lx/m^2) at a 0.5 degree observation angle and - 4.0 degree entrance angle. The retroreflectance of all other orange signs shall be maintained at a level not less than 75 percent of the minimum value required in 637.2.2.1 for standard reflective sheeting.
-

643.3.4 Signs

Add the following to the end as paragraph two:

- (2) The height of post-mounted temporary traffic control signs shall be a minimum of 7 feet (2.13 m) from the bottom of the sign to the height of the near edge of pavement or curb, unless otherwise approved by the engineer. The height to the bottom of a secondary sign mounted below another post-mounted sign shall be a minimum of 6 feet (1.82 m), unless otherwise approved by the engineer.
-

643.3.5.2 Types A (Low Intensity Flashing) and C (Steady Burn)

Add the following to the end as paragraph twelve:

- (12) Type A lights are not required to be installed on signs with fluorescent or non-fluorescent orange prismatic retroreflective sheeting.
-

643.3.7 Sign Message Overlays

Replace paragraph three with the following:

- (3) Non-word messages cannot be a sign overlay, except for the lane reduction transition sign, WO4-2.
-

643.3.12 Fixed Message Signs

Add the following to the end as paragraph two:

- (2) When a fixed message sign is mounted on posts, the height from the bottom of the sign to the height of the near edge of pavement or curb shall be a minimum of 7 feet (2.13 m), unless otherwise approved by the engineer.
-

643.5.1 Traffic Control

Replace paragraph one with the following:

- (1) The department will pay for Traffic Control, as measured above, at the contract lump sum price. That price is full compensation for constructing, assembling, painting, hauling, erecting, re-erecting, maintaining and removing traffic signs, drums, barricades and similar control devices, including arrow boards, unless otherwise provided; for furnishing, placing and maintaining lights and signals, including the fuel or power therefor, unless otherwise provided; for furnishing, applying and removing pavement markings, unless otherwise provided; and for all labor, tools, equipment, services and incidentals necessary to complete the work.

645.2.4 Geotextile Fabric, Type DF (Drainage Filtration)

Replace paragraph one and the associated tables of physical requirements with the following:

- (1) The fabric shall comply with the physical requirements of either schedule A, schedule B, or schedule C as the contract specifies.

SCHEDULE A TEST	METHOD	VALUE ^[1]
Grab tensile strength, N	ASTM D 4632	500 min.
Puncture strength, N	ASTM D 4833	175 min.
Apparent breaking elongation, %	ASTM D 4632	30 min.
Apparent opening size, μm	ASTM D 4751	300 max.
Permittivity, s^{-1}	ASTM D 4491	0.70 min.
SCHEDULE B TEST	METHOD	VALUE ^[1]
Grab tensile strength, N	ASTM D 4632	800 min.
Puncture strength, N	ASTM D 4833	300 min.
Apparent breaking elongation, %	ASTM D 4632	30 min.
Apparent opening size, μm	ASTM D 4751	300 max.
Permittivity, s^{-1}	ASTM D 4491	1.35 min.
SCHEDULE C TEST	METHOD	VALUE ^[1]
Grab tensile strength, N	ASTM D 4632	800 min.
Puncture strength, N	ASTM D 4833	300 min.
Apparent breaking elongation, %	ASTM D 4632	15 min.
Apparent opening size, μm	ASTM D 4751	600 max.
Permittivity, s^{-1}	ASTM D 4491	1.00 min.

645.2.6 Geotextile Fabric, Type R (Riprap)

Replace the entire text with the following:

- (1) The fabric shall comply with the following physical properties:

TEST	METHOD	VALUE ^[1]
Grab tensile strength, N	ASTM D 4632	900 min.
Puncture strength, N	ASTM D 4833	350 min.
Apparent breaking elongation, %	ASTM D 4632	15 min.
Apparent opening size, μm	ASTM D 4751	600 max.
Permittivity, s^{-1}	ASTM D 4491	0.12 min.

645.2.7 Geotextile Fabric, Type HR (Heavy Riprap)

Replace the entire text with the following:

- (1) The fabric shall comply with the following physical properties:

TEST	METHOD	VALUE ^[1]
Grab tensile strength, N	ASTM D 4632	1350 min.
Puncture strength, N	ASTM D 4833	450 min.
Apparent breaking elongation, %	ASTM D 4632	15 min.
Apparent opening size, μm	ASTM D 4751	600 max.
Permittivity, s^{-1}	ASTM D 4491	0.40 min.

646.2.3.1 General

Replace paragraph four with the following:

- (4) The beads shall be essentially free from surface scratching or scarring and have a minimum of 75 percent true spheres.

646.2.4.4.3 Qualification

Replace the entire text with the following:

- (1) The contractor shall provide a material that has demonstrated good performance on department projects.
- (2) If the epoxy material has not been used previously on a department project or is a "new improved" version of an accepted formula, the manufacturer shall submit to the bureau of highway operations 2 months before the bid date, the following for the proposed material:
 1. A list of 2 or more successful installations, in the United States, at least 2 years old with at least 8 km of line.
 2. A chemical composition report.
 3. The manufacturer's application recommendations.
- (3) The list of locations in item one of 646.2.4.4.3(2) shall include the project identification; length of the project; the contracting agency name; and the name, address, and telephone number of a contact person for each project.
- (4) The bureau of highway operations will designate at least 8 km of line on a department project for field performance evaluation. The proposed material must meet the department's minimum retroreflectivity and durability requirements for one year in service. General approval will require further performance evaluation on one additional project

646.4.2 Applying Painted Markings

Add the following to the end as paragraph three:

- (3) The paint shall be applied according to the manufacturer's recommendation for minimum pavement temperature.

646.4.7 Locating No-Passing Zones

Replace paragraph four with the following:

- (4) The sight distance requirements shall conform to the following:

SPEED CRITERIA in miles per hour (km/h)	SPOTTING SIGHT DISTANCE in feet (m)	MINIMUM DISTANCE BETWEEN ZONES in feet (m)
25 or 30 (40 or 50)	528 (160)	528 (160)
35 or 40 (55 or 65)	686 (210)	528 (160)
45 or 50 (70 or 80)	845 (260)	660 (201)
55 (90)	1108 (340) ^[1]	792 (240)
Where authorized	1373 (420)	792 (240)

^[1] The district traffic section shall be consulted before spotting the no-passing zone.

647.1 Description

Replace paragraph eleven with the following:

- (11) Pavement Marking, Curb, consists of the furnishing and application of reflectorized curb marking of the specified color, configuration and material. The contractor shall mark the vertical face and top of the curb.

649.2.3 Reflectorized Paint

Replace the entire text with the following:

- (1) The paint shall be commercially available solvent-borne or waterborne paint intended for marking traffic lanes on both concrete and asphaltic highways. The paint shall conform to requirements of 646.2.1 and 646.2.2. Reflectorization of the paint shall be by means of glass beads. The glass beads shall conform to requirements of 646.2.3. The color of the paint shall be yellow or white, as required on the plans.
-

649.4 Construction Methods

Add the following to the end as paragraph ten:

- (10) When no passing zone temporary pavement marking is required, the contractor shall be responsible for the referencing of the beginning and end of all existing no-passing zones prior to pavement resurfacing which will cover the pavement markings. The contractor shall be responsible for the accurate re-marking of the required temporary no-passing zones.
-

651.3 Construction Methods

Replace paragraph eight with the following:

- (8) The electrical connection between the equipment grounding conductor and any equipment grounding electrode shall be made by the exothermic weld method.
-

658.1 Description

Replace paragraph six with the following:

- (6) (Vacant)
-

658.2.5 Backplates

Delete the entire text and replace the subsection heading with the following:

658.2.5 (Vacant)

658.3.4 Backplates

Replace the entire text with the following:

- (1) The contractor shall furnish and install backplates on all signal faces as shown on the plans.
-

658.4 Method of Measurement

Replace paragraph one with the following:

- (1) The department will measure Trombone Arms, Monotube Arms, Traffic Signal Faces, Pedestrian Signal Faces and Pedestrian Push Buttons as each individual unit acceptably completed.
-

658.5 Basis of Payment

Replace paragraphs four and five with the following:

- (4) The department will pay for Traffic Signal Faces, (Size), (Vertical or Horizontal), as measured above, at the contract unit price. That price is full compensation for furnishing and installing signal faces including lamps and backplates; and for all labor, tools, equipment and incidentals necessary to complete the work.
- (5) (Vacant)

SCHEDULE OF BID ITEMS ADDED AND RETIRED BY THE 2000 SUPPLEMENTAL SPECIFICATIONS

BID ITEMS ADDED - U.S. STANDARD MEASURE (EAS VERSION 3)

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
20424	Removing Marker Posts	Each
40721	Asphaltic Concrete Pavement, Type E-0.3	Ton
40722	Asphaltic Concrete Pavement, Type E-1	Ton
40723	Asphaltic Concrete Pavement, Type E-3	Ton
40724	Asphaltic Concrete Pavement, Type E-10	Ton
40725	Asphaltic Concrete Pavement, Type E-30	Ton
40726	Asphaltic Concrete Pavement, Type E-30x	Ton
40727	Asphaltic Concrete Pavement, Type SMA	Ton
40728	Density Incentive, Asphaltic Concrete Pavement	Dollars
41101	Asphaltic Surface	Ton
41102	Asphaltic Surface, Patching	Ton
41103	Asphaltic Surface, Detours	Ton
41104	Asphaltic Surface, Safety Islands	Ton
41105	Asphaltic Surface, Driveways and Field Entrances	Ton
41106	Asphaltic Surface, Temporary	Ton
41526	Concrete Pavement, 6 1/2-Inch	S.Y.
41527	Concrete Pavement, 7 1/2-Inch	S.Y.
41528	Concrete Pavement, 8 1/2-Inch	S.Y.
41529	Concrete Pavement, 9 1/2-Inch	S.Y.
41530	Concrete Pavement, 10 1/2-Inch	S.Y.
41531	Concrete Pavement, 11 1/2-Inch	S.Y.
41538	H.E.S. Concrete Pavement, 8 1/2-Inch	S.Y.
41539	H.E.S. Concrete Pavement, 9 1/2-Inch	S.Y.
41540	H.E.S. Concrete Pavement, 10 1/2-Inch	S.Y.
41541	H.E.S. Concrete Pavement, 11 1/2-Inch	S.Y.
50265	Protective Surface Treatment	S.Y.
50903	Preparation, Decks, Type 1	S.Y.
50904	Preparation, Decks, Type 2	S.Y.
62002	Concrete Median Blunt Nose	S.F.
62003	Concrete Median Sloped Nose	S.F.
61150	Manhole Covers, Type J-Special	Each
61172	Inlet Covers, Type HM-GJ	Each
61173	Inlet Covers, Type HM-GJ-S	Each
61434	Steel Plate Beam Guard, Slotted Rail Terminal	Each
61435	Steel Plate Beam Guard, Energy Absorbing Terminal	Each
62815	Silt Fence, Delivered	L.F.
62816	Silt Fence, Installed	L.F.
62826	Erosion Mat, Delivered, Class I, Type Urban	S.Y.
62827	Erosion Mat, Installed, Class I, Type Urban	S.Y.
62855	Polyethylene Sheeting	S.Y.
62860	Turbidity Barriers	S.Y.
62865	Soil Stabilizer, Type A	acre
62866	Soil Stabilizer, Type B	acre
62870	Inlet Protection, Type A	Each
62871	Inlet Protection, Type B	Each
62872	Inlet Protection, Type C	Each
62875	Temporary Ditch Checks, Delivered	L.F.
62876	Temporary Ditch Checks, Installed	L.F.
62880	Culvert Pipe Ditch Checks	Each

63110	Lawn Sod	S.Y.
63111	Erosion Control Sod	S.Y.
63112	Erosion Control Sod, Sandy Soil	S.Y.
64101-64105 et seq.	Sign Bridge, Single Pole Sign Support, One Sign, Structure ____	LS
64106-64110 et seq.	Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____	LS
64112-64125 et seq.	Sign Bridge, Cantilevered, Structure ____	LS
64151-64155 et seq.	Sign Bridge, Structure Mounted, Structure ____	LS
64181-64185 et seq.	Overhead Sign Support, Structure ____	LS
65040	Construction Staking, Storm Sewer System	Each
65045	Construction Staking, Subgrade	L.F.
65050	Construction Staking, Crushed Aggregate Base Course	L.F.
65055	Construction Staking, Curb, Gutter, and Curb and Gutter	L.F.
65060	Construction Staking, Pipe Culverts	Each
65065-65069 et seq.	Construction Staking, Structure Layout, Structure ____	LS
65070	Construction Staking, Concrete Pavement	L.F.
65075	Construction Staking, Concrete Barrier	L.F.
65080	Construction Staking, Resurfacing Reference	L.F.
65085-65089 et seq.	Construction Staking, Electrical, Project ____	LS
65099	Construction Staking, Initial Layout	L.F.
65308	Pull Boxes, Steel, 12x30-Inch	Each
65309	Pull Boxes, Steel, 18x30-Inch	Each
65310	Pull Boxes, Steel, 24x42-Inch	Each
65311	Pull Boxes, Steel, 24x48-Inch	Each
65410	Concrete Bases, Type 6	Each
65719	Traffic Signal Standards, Steel, 3.5-Foot	Each
65724	Traffic Signal Standards, Steel, 10-Foot	Each
65729	Traffic Signal Standards, Aluminum, 3.5-Foot	Each
65734	Traffic Signal Standards, Aluminum, 10-Foot	Each
65939	Luminaire Arms, Truss Type, 6-inch Clamp, 15-Foot	Each
65940	Luminaire Arms, Truss Type, 6-inch Clamp, 12-Foot	Each
65941	Luminaire Arms, Truss Type, 6-inch Clamp, 10-Foot	Each
65944	Luminaire Arms, Single Member, 6-inch Clamp, 6-Foot	Each

BID ITEMS RETIRED - U.S. STANDARD MEASURE (EAS VERSION 3)

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
20503	Unclassified Excavation	C.Y.
40712	Asphaltic Concrete Pavement, Type HV	Ton
40713	Asphaltic Concrete Pavement, Type MV	Ton
40714	Asphaltic Concrete Pavement, Type LV	Ton
30421	Asphaltic Pavement, Base Course	C.Y.
30422	Asphaltic Pavement, Base Course	Ton
50230	Protective Surface Treatment	Gal.
50901	Preparation, Decks	S.Y.
61911-61925	Mobilization, Project _____	LS
et seq.		
62848	Silt Fence, Silty Soil, Delivered	L.F.
62849	Silt Fence, Sandy Soil, Delivered	L.F.
62850	Silt Fence, Silty Soil, Installed	L.F.
62851	Silt Fence, Sandy Soil, Installed	L.F.
63101	Sodding	S.Y.
64127	Sign Bridges, 20-Ft. Span	Each
64128	Sign Bridges, 25-Ft. Span	Each
64129	Sign Bridges, 30-Ft. Span	Each
64130	Sign Bridges, 35-Ft. Span	Each
64131	Sign Bridges, 40-Ft. Span	Each
64132	Sign Bridges, 45-Ft. Span	Each
64133	Sign Bridges, 50-Ft. Span	Each
64134	Sign Bridges, 55-Ft. Span	Each
64135	Sign Bridges, 60-Ft. Span	Each
64136	Sign Bridges, 65-Ft. Span	Each
64137	Sign Bridges, 70-Ft. Span	Each
64138	Sign Bridges, 75-Ft. Span	Each
64139	Sign Bridges, 80-Ft. Span	Each
64140	Sign Bridges, 85-Ft. Span	Each
64142	Sign Bridges, 90-Ft. Span	Each
64143	Sign Bridges, 95-Ft. Span	Each
64144	Sign Bridges, 100-Ft. Span	Each
64145	Sign Bridges, 105-Ft. Span	Each
64146	Sign Bridges, 110-Ft. Span	Each
64147	Sign Bridges, 115-Ft. Span	Each
64148	Sign Bridges, 120-Ft. Span	Each
64160	Single Pole Sign Supports, One Sign	Each
64165	Single Pole Sign Supports, Two Signs	Each
64180	Overhead Sign Supports	Each
65835	Backplates, 1 Section, 12-Inch Signal Faces	Each
65836	Backplates, 3 Section, 12-Inch Signal Faces	Each
65837	Backplates, 4 Section, 12-Inch Signal Faces	Each
65838	Backplates, 5 Section, 12-Inch Signal Faces	Each
65839	Backplates, 12-8-8 Inch Signal Faces	Each

SCHEDULE OF BID ITEMS ADDED AND RETIRED BY THE 2000 SUPPLEMENTAL SPECIFICATIONS

BID ITEMS ADDED - SI METRIC (EAS VERSION 4)

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
20424	Removing Marker Posts	Each
40721	Asphaltic Concrete Pavement, Type E-0.3	Mg
40722	Asphaltic Concrete Pavement, Type E-1	Mg
40723	Asphaltic Concrete Pavement, Type E-3	Mg
40724	Asphaltic Concrete Pavement, Type E-10	Mg
40725	Asphaltic Concrete Pavement, Type E-30	Mg
40726	Asphaltic Concrete Pavement, Type E-30x	Mg
40727	Asphaltic Concrete Pavement, Type SMA	Mg
40728	Density Incentive, Asphaltic Concrete Pavement	Dollars
41101	Asphaltic Surface	Mg
41102	Asphaltic Surface, Patching	Mg
41103	Asphaltic Surface, Detours	Mg
41104	Asphaltic Surface, Safety Islands	Mg
41105	Asphaltic Surface, Driveways and Field Entrances	Mg
41106	Asphaltic Surface, Temporary	Mg
41526	Concrete Pavement, 165 mm	m ²
41527	Concrete Pavement, 190 mm	m ²
41528	Concrete Pavement, 215 mm	m ²
41529	Concrete Pavement, 240 mm	m ²
41530	Concrete Pavement, 265 mm	m ²
41531	Concrete Pavement, 290 mm	m ²
41538	H.E.S. Concrete Pavement, 215 mm	m ²
41539	H.E.S. Concrete Pavement, 240 mm	m ²
41540	H.E.S. Concrete Pavement, 265 mm	m ²
41541	H.E.S. Concrete Pavement, 290 mm	m ²
50265	Protective Surface Treatment	m ²
50903	Preparation, Decks, Type 1	m ²
50904	Preparation, Decks, Type 2	m ²
62002	Concrete Median Blunt Nose	m ²
62003	Concrete Median Sloped Nose	m ²
61150	Manhole Covers, Type J-Special	Each
61172	Inlet Covers, Type HM-GJ	Each
61173	Inlet Covers, Type HM-GJ-S	Each
61434	Steel Plate Beam Guard, Slotted Rail Terminal	Each
61435	Steel Plate Beam Guard, Energy Absorbing Terminal	Each
62815	Silt Fence, Delivered	m
62816	Silt Fence, Installed	m
62826	Erosion Mat, Delivered, Class I, Type Urban	m ²
62827	Erosion Mat, Installed, Class I, Type Urban	m ²
62855	Polyethylene Sheeting	m ²
62860	Turbidity Barriers	m ²
62865	Soil Stabilizer, Type A	ha
62866	Soil Stabilizer, Type B	ha
62870	Inlet Protection, Type A	Each
62871	Inlet Protection, Type B	Each
62872	Inlet Protection, Type C	Each
62875	Temporary Ditch Checks, Delivered	m
62876	Temporary Ditch Checks, Installed	m
62880	Culvert Pipe Ditch Checks	Each

63110	Lawn Sod	m ²
63111	Erosion Control Sod	m ²
63112	Erosion Control Sod, Sandy Soil	m ²
64101-64105 et seq.	Sign Bridge, Single Pole Sign Support, One Sign, Structure ____	LS
64106-64110 et seq.	Sign Bridge, Single Pole Sign Support, Two Signs, Structure ____	LS
64112-64125 et seq.	Sign Bridge, Cantilevered, Structure ____	LS
64151-64155 et seq.	Sign Bridge, Structure Mounted, Structure ____	LS
64181-64185 et seq.	Overhead Sign Support, Structure ____	LS
65040	Construction Staking, Storm Sewer System	Each
65045	Construction Staking, Subgrade	m
65050	Construction Staking, Crushed Aggregate Base Course	m
65055	Construction Staking, Curb, Gutter, and Curb and Gutter	m
65060	Construction Staking, Pipe Culverts	Each
65065-65069 et seq.	Construction Staking, Structure Layout, Structure ____	LS
65070	Construction Staking, Concrete Pavement	m.
65075	Construction Staking, Concrete Barrier	m
65080	Construction Staking, Resurfacing Reference	m
65085-65089 et seq.	Construction Staking, Electrical, Project ____	LS
65099	Construction Staking, Initial Layout	m
65308	Pull Boxes, Steel, 300 x 750 mm	Each
65309	Pull Boxes, Steel, 450 x 750 mm	Each
65310	Pull Boxes, Steel, 24x42-Inch	Each
65311	Pull Boxes, Steel, 24x48-Inch	Each
65410	Concrete Bases, Type 6	Each
65719	Traffic Signal Standards, Steel, 1.1 m	Each
65724	Traffic Signal Standards, Steel, 3.0 m	Each
65729	Traffic Signal Standards, Aluminum, 1.1 m	Each
65734	Traffic Signal Standards, Aluminum, 3.0 m	Each
65939	Luminaire Arms, Truss Type, 150 mm Clamp, 4.6 m	Each
65940	Luminaire Arms, Truss Type, 150 mm Clamp, 3.7 m	Each
65941	Luminaire Arms, Truss Type, 150 mm Clamp, 3.0 m	Each
65944	Luminaire Arms, Single Member, 150 mm Clamp, 1.8 m	Each

BID ITEMS RETIRED - SI METRIC (EAS VERSION 4)

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
20503	Unclassified Excavation	m ³
40712	Asphaltic Concrete Pavement, Type HV	Mg
40713	Asphaltic Concrete Pavement, Type MV	Mg
40714	Asphaltic Concrete Pavement, Type LV	Mg
30421	Asphaltic Pavement, Base Course	m ³
30422	Asphaltic Pavement, Base Course	Mg
50230	Protective Surface Treatment	L
50901	Preparation, Decks	m ²
61911-61925	Mobilization, Project _____	LS
et seq.		
62848	Silt Fence, Silty Soil, Delivered	m
62849	Silt Fence, Sandy Soil, Delivered	m
62850	Silt Fence, Silty Soil, Installed	m
62851	Silt Fence, Sandy Soil, Installed	m
63101	Sodding	m ³
64127	Sign Bridges, 6.1 m Span	Each
64128	Sign Bridges, 7.6 m Span	Each
64129	Sign Bridges, 9.1 m Span	Each
64130	Sign Bridges, 10.7 m Span	Each
64131	Sign Bridges, 12.2 m Span	Each
64132	Sign Bridges, 13.7 m Span	Each
64133	Sign Bridges, 15.2 m Span	Each
64134	Sign Bridges, 16.8 m Span	Each
64135	Sign Bridges, 18.3 m Span	Each
64136	Sign Bridges, 19.8 m Span	Each
64137	Sign Bridges, 21.3 m Span	Each
64138	Sign Bridges, 22.9 m Span	Each
64139	Sign Bridges, 24.4 m Span	Each
64140	Sign Bridges, 25.9 m Span	Each
64142	Sign Bridges, 27.4 m Span	Each
64143	Sign Bridges, 29.0 m Span	Each
64144	Sign Bridges, 30.5 m Span	Each
64145	Sign Bridges, 32.0 m Span	Each
64146	Sign Bridges, 33.5 m Span	Each
64147	Sign Bridges, 35.1 m Span	Each
64148	Sign Bridges, 36.6 m Span	Each
64160	Single Pole Sign Supports, One Sign	Each
64165	Single Pole Sign Supports, Two Signs	Each
64180	Overhead Sign Supports	Each
65835	Backplates, 1 Section, 300 mm Signal Faces	Each
65836	Backplates, 3 Section, 300 mm Signal Faces	Each
65837	Backplates, 4 Section, 300 mm Signal Faces	Each
65838	Backplates, 5 Section, 300 mm Signal Faces	Each
65839	Backplates, 300-200-200 mm Signal Faces	Each

ERRATA SHEET

Conversion Table (page 751):

Under the heading "Volume", change "millimeter" to "milliliter".
